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ABSTRACT

The evaluation of instructional television (ITV) is a new field with evaluation methods largely borrowed from other disciplines. The evaluator is not apt to be trained specifically in this area but will learn "on the job" while defining his role for those with whom he works. The evaluator should consider the following recommendations: (1) Evaluation should be an integral part of the ITV project plan; (2) The evaluator should help project planners define their short and long term goals; (3) Unintended results may be a by-product of the project and should not be overlooked; (4) Improving the methods of cost analysis is a very important area for future evaluations; (5) The evaluator should balance those aspects of the program that require definite decisions and those that seem most critical for the program's survival; (6) A reasonable time frame should be observed and decision deadlines met; and (7) Results should be communicated in a clear and useful fashion to the right person. A five page bibliography is included together with a variety of sample guidelines and questionnaires used in other evaluation studies. (Author/NR)

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STUDYING INSTRUCTIONAL TELEVISION : WHAT SHOULD BE EVALUATED

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December, 1973

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FOREWARD

The present essay on evaluation of instructional television is meant to be a first step in a process. The whole rapidly growing field of evaluation is relatively new, that of ITV evaluation has only just begun. Unesco has fostered the use of ITV in a number of educational projects throughout the world. Although technology has considerable promise for solving educational problems, the cost and complexity of a technology like ITV is such that a failure of even a low degree of productivity could mean much to countries investing. Lessons from one country can also serve to help others decide what role ITV might play in their own educational development. As a consequence of such needs, Unesco sees evaluation as an important component of ITV projects.

We have been asked to write this essay as a first step in the process of creating better evaluations of ITV. Our experience over the past five years in a number of evaluations of educational technology forms the basis of the present study. Its focus is on the general area of <u>what</u> to evaluate. Its audience is those evaluators in ITV projects who have the important role of monitoring the planning and progress of technology in their countries. We decided to divide the task of writing about evaluation into several steps. For now we concentrate on <u>what</u> should be evaluated in ITV projects and not on <u>how</u>. The former approach identifies the many aspects of the technology that need to be assessed and reported. An attempt has been made to expand the notion of evaluation from one of a testing program for classroom television to a more complete inventory of the system's impact. In a sense the <u>how</u> or the design and methodology of evaluation

must come after one decides on what needs to be evaluated. Evaluation methods are largely borrowed from other disciplines and applied within a framework of decision-making about the value of a certain project or program. In a sense, these methods are available to the evaluator who can identify what he needs to evaluate. His job is to aggregate data from various sources in such a way as to render a valid judgment of his project.

We hope that this first step will lead to others - feedback from field evaluators on this description of the aspects of ITV evaluation; perhaps a field test by several evaluation groups of the aspects discussed. These field tests might be guided by seminars within the pilot projects given by evaluation experts on the design and methods appropriate to the particular aspects chosen. The results of the pilot tests might then be summed up in a more complete field manual on evaluation of ITV that combines both the what and the how.

We would only add that the advantage of this present approach of a modest beginning essay, field testing and preparation of a manual for evaluators is meant to bridge the gap between the large amount of theoretical writing about evaluation and its practice in field projects. Eventually we would hope to add to the theoretical literature on television and its evaluation but we can only build a solid theory on the basis of practice. Until people can begin to try evaluation strategies out, we shall not be able to test our theories against reality. This essay hopefully makes the first step of this process.

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I. EVALUATING INSTRUCTIONAL TECHNOLOGY: THE SETTING

Educational Needs and Technology

Throughout the developing world, educational demand is growing rapidly. In Africa and Latin America, where up to 85% of first grade entrants have left school before completing six grades, and where secondary schools and universities have served only an elite, a concerted effort has been made to expand learning opportunities. In Asia, where enrollment pressures have been less severe, improvements in the quality of education have been emphasized.

For economic, political and moral reasons, most national leaders have continued to view schooling as a cornerstone of their development policies. Yet they have not had sufficient financial or human resources to simply expand their school systems in traditional ways. As a result, many countries have inaugurated instructional radio and television projects. By so doing they have tried to hold down new investments in classroom facilities and teachers, relying instead on a combination of less well trained classroom monitors and television or radio programs. In some countries the primary goal has been to provide many more young people with a satisfactory education with no appreciable increase in per student costs. In other countries where the goal has been to improve the quality of an existing system, per student costs have generally risen. However, it is argued that the use of instructional technology may be the least expensive way to improve quality on a system-wide basis.

The introduction of a powerful instructional technology such as radio or television customarily demands fundamental changes in

the traditional elements of an educational system. In the classroom, teachers are no longer the sole sources of knowledge. Finding a new role, one that is complementary to new technology, is no easy task. Similarly, the responsibilities of school officials at the regional and national levels may also change dramatically when technology systems are introduced. The amount of teaching and actual control emanating from some central point increases with the introduction of a radio or television system and the successful utilization of broadcast lessons may depend, in turn, on the administrators' knowledge of what is happening at the local level. In the past a central ministry sent out monthly pay checks and an occasional supervisor; with a new technology the flow of information from the ministry in the form of program schedules, workbooks and announcements to teachers via TV is enormously increased. To facilitate the transition to radio or television systems, new supervisory mechanisms are required. Other needs could be cited, but the point should be clear: educational systems using technology tend to be more highly centralized and dependent on the integration of the diverse parts. This means that technology systems are more fragile and need feedback for proper coordination. The failure of one component can undermine the effectiveness of the entire instructional process.

It is the interdependence of elements within instructional technology projects and their fragility which make evaluation so essential. With good evaluation, the supervisors, program producers and planners can identify problems early and make needed adjustments when failures occur. By correcting small failures, they can usually

avoid larger ones.

Furthermore, since technology systems are relatively expensive investments for a country, information on their level of overall success is important for decision-makers of other countries as well.

The Types of Evaluation

Evaluative research is concerned with the success or failure of projects. However, in this essay we consider only those kinds of evaluative research which bear on decisions, either within ongoing projects or in the planning of future projects. These include planning research, formative evaluation and summative evaluation.

Planning research entails the collection of essential data on a technology system before it is implemented and often before a decision is made to undertake it. Among the most common methods of data collection are feasibility studies which survey the key aspects of an educational environment, specifying the technical requirements for the transmission of radio or TV broadcasts and estimating how much effort will be needed to develop curricula, prepare learning materials, and train personnel.[1] Planners often have much information of this kind already at their disposal. However, the scope of information needed to design and implement technology projects may warrant new studies. Planners of technology systems may want information on student ability and achievement levels in the past, as well as some notion of what teachers and students are expecting of radio or television in the classroom. Teacher attitudes toward instructional technology must also be well

1 Cf. bibliography III.A for examples.

understood by planners if new classroom procedures and training opportunities are to be designed to equip teachers adequately for work in the new system.

The list of topics for planning research and the criteria for choosing among them could be extended considerably. In choosing areas for planning research, administrators and evaluators are able to focus their attention on the components of an educational system which are most fragile and therefore most likely to undermine project effectiveness.

Formative evaluation is a process of data collection during the development of a project so that revisions can be made to improve its functioning. Such evaluation touches decisions at every level of a project. Sometimes project administrators must decide whether to depend more on printed materials, classroom teachers, or television programs for a given course. Program producers need to know whether a given concept was learned satisfactorily and if students are ready for the next unit of material. Script writers need to know whether particular lessons were able to attract and hold the students' attention. When difficulties occur in these or other areas of an instructional technology system, formative evaluation is used to diagnose the problem and to provide some indication of what corrective steps are called for.

Summative evaluation is a process of data collection designed to provide decision-makers with a more comprehensive understanding of how a project succeeds or fails in reaching its goals. It differs in time perspective from formative evaluation and is usually aimed at those decision-makers who control funds to continue or terminate the project. Nevertheless, the two approaches overlap in many ways. The variables

or effects studied in both approaches may be quite similar. Formative evaluations of learning and attitudes often do contribute to summative evaluations of the same phenomena. The most important differences between formative and summative evaluation pertain to the kinds of decisions which each is meant to influence. The need for immediate information to guide short range decisions (was last week's concept learned so that another one can be taught this week?) justifies a formative evaluation strategy with its inevitable compromises in methodology. However, when gathered in a systematic way, the data from formative evaluations often provide the basis for the longer range analyses and conclusions characteristic of summative evaluations.

The Historical Place of Evaluation

Although the need for evaluation of various kinds has been clear for some time, in practice most educational technology projects have done without it. What few evaluations there have been cluster into three basic groups. The largest group has been largely judgmental or subjective. An outside expert is asked to examine a project in a few days or weeks. He visits a few schools, catalogues the hardware, speaks to some of the people involved, and sometimes obtains cost estimates. Such an approach may prove useful in many ways, depending on the ability and experience of the expert, but it rarely helps a project director to improve his system. A second and more sophisticated approach incorporates some attempt to measure effects. Its methods may include comparative before-and-after studies of short term learning or, more often, surveys of teachers' attitudes about a course or a television series. These results can be fed back to program administrators

or producers, but often they are of little use in suggesting pragmatic changes and may irritate rather than guide producers. The third and rarest type of evaluation consists of rigorous attempts to understand the functioning of an educational technology system. Here measures of effects are combined with analysis of the processes by which those effects were produced.

One of the reasons why there have been few evaluations of ITV systems in the past is perhaps that, in retrospect, there have been few users of the evaluations that have been done, and the information gathered in even the best formative or summative studies has rarely affected decisions in an important way. If the results of previous evaluations have not been used, why write an essay to advocate more? The response to this question must await analysis of just why evaluations have not been used.

One can point to three major reasons why evaluation results have not been used effectively in the past. First, the focus of evaluations has more often than not been defined by the evaluator and not the decision-maker. Evaluations are often exercises planned by an academic with little empathy for the needs of a manager. Secondly, because administrators and program producers are customarily under heavy day to day pressure to meet schedules, their receptivity to learning results from programs broadcast weeks or months previously is likely to be quite low. Any information which does not respond to the priority concern of getting a program prepared on time is apt to be ignored. The third reason why evaluation results have not been used is simply that evaluations are threatening. While the evaluator may claim

that he is objectively evaluating a system and not individuals, those individuals justifiably assume that they will be accountable for any negative result. Finally, if one adds to the above list of reasons the fact that evaluation costs money and that evaluation units must usually compete for their share of a system's budget, the question posed earlier seems well justified: why do evaluation?

The fact that evaluation has often been done poorly in the past does not lessen its essential importance for educational systems using technology. The real challenge is to transform the need for evaluation into a commitment on the part of projects and project personnel to use evaluation and to help evaluators improve their work.

Evaluators must respond to the concerns of decision-makers and report results in ways that bear directly on the latter's decision alternatives. Program producers must be granted more time and encouraged to use evaluation results to improve the quality of their broadcasts. At the same time, evaluators should recognize the real limits of time and action of producers, and design their formative evaluations to fit within those constraints. Finally, project administrators must introduce a climate in which teaching effectiveness has first priority, both as a general system goal and as a criterion for judging the success of the producing organization and its personnel. Too often the responsibility of a production center ends when the program is on tape and ready for broadcast. In broadening the concept of producer accountability to encompass what results in the classroom, the administrator must recognize that success and failure, while not divorced from the actions of individuals, have multiple causes. Evaluation can best serve

the principle of accountability only if it is used to improve program effectiveness and not to lay blame at the feet of the easiest target.

Organization of the Essay

The rest of this essay examines various aspects of the question, what should be evaluated in an instructional technology project? Section II describes the first step of the evaluator, exploring the context, goals, and assumptions of a project. Section III reviews a schema for evaluating the achievement of a project's objectives and details a range of intended and unintended outcomes that have concerned or should concern evaluators. Section IV takes up the difficult evaluative issue of explaining a project's success or failure. Recognizing that a very large array of research topics was described in previous sections, Section V describes some criteria to help evaluators select among them. Finally, a bibliography on evaluation theory and methodology is presented in the appendix.

II. SPECIFYING PROJECT OBJECTIVES AND ASSUMPTIONS

Before an evaluator, particularly an evaluator from outside a project, begins his investigation, he must construct a global picture of the project. The quality of the data an evaluator collects as well as his ability to make insightful interpretation of it will depend on a thorough understanding of the historical context, objectives and value assumptions of the project.

As a first step, an evaluator should familiarize himself with the relevant scientific literature. For almost any use of instructional technology there are precedents, similar projects for which there are available written descriptions, histories and perhaps even evaluations. While no two projects ever overlap completely, a review of existing information can illuminate possible trouble points and suggest important research questions. In addition, such a review can help the evaluator select the most appropriate methodologies for his study.[2]

After preparing himself in this way, the evaluator can examine his own project with greater perspective. The first step includes three basic activities: specifying the project's internal objectives, defining its external objectives, and exploring its value assumptions and underlying development model.

Specifying the Project's Internal Objectives

An evaluator needs to have a clear idea of what a project is expected to accomplish, so that he knows what constitutes success or failure. However, objectives expressed in planning documents or by project leaders are often vague and without clear criteria (i.e. improve the quality of learning, modernize the traditional school, upgrade rural education, etc.). In addition, objectives are often overly ambitious, a result of the planners' initial need to gain acceptance and support for their project.

Oftentimes planners have not adequately thought through

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2 Some help for this task can be found in the bibliography in the appendix.

their project's objectives. They may even have endorsed a particular instructional technology without first focusing clearly on the problems it is expected to solve. In some cases, project planners may not be willing to specify their objectives for fear they will be held too strictly accountable by their superiors. In all such instances, however, the evaluator's need for specific objectives remains and, one way or another, he must help project leaders to clarify them as best they can.

The task of transforming vague or unrealistic project objectives into specific ones is not always easy. Important steps in the specification process customarily include:

1. the separation of ambiguous or confounded dimensions of a particular objective into discrete variables (e.g. increasing educational opportunity in many ITV projects often does not distinguish between opportunity of entrance or equality of learning; the first is measured by enrollment statistics, the second requires monitoring learning gains of different social groups);
2. the full definition of each variable in which some change is predicted (e.g. defining equality of learning not only in terms of academic achievement but also on some standard of success in later life).
3. the setting of some clear change criteria for each variable that is to be evaluated (e.g. it is difficult to decide whether statistically significant learning gains are also socially significant; nevertheless, evaluators must set criteria for learning to judge success or failure).

The brevity with which each of these steps is stated should not mislead

the reader. While transforming some objectives into specific research variables can be relatively straightforward, there are many objectives for which such transformations are very difficult, if not impossible. There may also be some objectives that cannot be measured within any reasonable time frame or research budget.

There has been an unfortunate tendency among evaluators to concentrate only on variables that can easily be measured rather than on those that most adequately reflect the true range of a project's objectives. Just because variables are not easily quantifiable does not mean they should be ignored. Hard to measure objectives can be dealt with in other ways, however. One can often examine effects related to a particular objective, even though direct examination is not possible. For example, if a project's main objective is to curtail the exodus of rural school graduates from the countryside, an evaluator might measure student attitudes toward city life or their occupational aspirations as indicators of future plans. Under the assumption that students who do intend to move to the city will also be more interested in visiting it, one could also look for changes in the number of student trips to the city over the period of a year or two. In each case, approximation to the underlying variable, future migration rate, is achieved.

Another approach to hard to measure objectives requires that the planners and evaluators of a project specify the steps required to reach an objective. What are the intervening objectives that must be reached by a project before it attains its ultimate goals? If one wished to curtail the urban migration rate by providing good schooling

in rural areas through ITV, a preliminary step might be to provide young people with information via television about employment opportunities in rural areas. One could then measure whether or not that information had been effectively communicated. Other such preliminary objectives could also be defined and measured. To the extent that they were not achieved, the evaluator could infer logically that the ultimate objective was also not being achieved.

Defining External Objectives

Most ITV projects have some notion, albeit a vague one, of their immediate objectives. More graduates of secondary school, improved mathematics learning, more literate rural dwellers, or more farmers accepting innovative agricultural practices are among the more common objectives of instructional technology projects. Yet it is clear that these objectives are not ends in themselves; planners assume that they will be stepping stones toward some longer range development goal.

In El Salvador, instructional television was introduced into all public seventh, eighth and ninth grade classrooms as one component of a general educational reform. Among the expectations of the project planners was that many more students would graduate from ninth grade and thereafter constitute a trainable labor pool for industry. However, the internal objective of producing more secondary graduates was subsidiary to the external objective of accelerating the country's economic development.

In looking at external objectives, the evaluator asks, in effect, what will be the societal effect of an educational project if

it is successful? What is the development model that the planners are employing in their choice of project objectives? Such questions are rarely the day to day fare of evaluation, yet they are an essential exercise for planners. Unfortunately, direct evaluation of such objectives is often not possible. They are customarily long term objectives, achievable only years or decades hence. Few evaluators consider such objectives to be within the scale of their research. In addition, societal benefits are difficult to assess from a single project. The social outcomes go beyond the particular population exposed to a media project and the achievement of benefits is expected to be a consequence of many causes and not just an isolated project.

Sometimes historical evidence can be used to estimate whether or not an internally successful project is leading to given social benefits. Assuming that similar objectives have not been achieved in other countries, doubts about their fulfillment in a new project may be raised. Thus some have questioned the evidence for El Salvador's assumption that more ninth grade graduates will accelerate industrial growth and economic development. They claim that too little evidence supporting that assumption exists to justify it as a basis for El Salvador's educational reform.

Neither empirical nor historical methods have yielded very satisfactory evaluations of external objectives in the past, both because of problems of long time spans involved and the complicated relationship between education and society. There is value, however, in defining a project's external objectives: it permits project planners and those who might fund the project to make some estimates

about the likelihood that these objectives will be achieved. This is often critical at the planning or funding stage of a project. Thus, even though Sesame Street has not recently stressed as a goal helping to close the learning gap for minorities in the U.S., this was a social benefit mentioned when the idea was first being discussed for funding. If Unesco funders did not believe that a proposed ITV project would accomplish certain external goals claimed for it, like helping a nation's industrial growth, stemming the rural exodus or closing a learning gap between social groups, then they would hesitate to back such a project even though it might accomplish its internal objectives satisfactorily.

Exploring Underlying Assumptions

Assuming that both the internal and the external objectives of a project can be defined, planners may ask an evaluator to go one step further in the specification process and ask him to make explicit the value assumptions on which the project rests. If more ninth grade graduates are produced in order to attract industrial capital, planners considering adoption of an El Salvador type project in another country may ask if, in fact, that country should place as high a priority on industrial development. If rural development enjoys a high priority, a project which assumes rural-to-urban migration may be a poor one to adopt, no matter how efficiently internal and external objectives could be met. Again, if an ITV project is capital and not labor intensive, it may on these grounds be less useful for countries with large pools of trained teachers.

Given that external objectives are specified and the development model made explicit, deciding whether they are applicable to another country may be a fairly straightforward activity. A more difficult problem may be reconciling different personal and social values implicit in the design of a media based system. Most countries place a high priority on economic development; yet that is rarely a country's only priority or objective. Other objectives, such as increasing national pride and loyalty, community cooperation, and the sense of personal efficacy, rank high for some national leaders. Yet, accepting multiple objectives simultaneously can lead to difficulties.

Let us say that planners believe that widespread literacy is essential for economic development, and further let us assume that televised programs in conjunction with formal classes are the most efficient means for achieving literacy. However, those planners may also believe that television as a centrally controlled delivery system is counterproductive to an important secondary objective such as building a higher sense of personal efficacy among people. They may see that the achievement of one objective may work against the achievement of another. In order to maximize both objectives, they may ultimately elect an alternative method of instruction, one not as efficient in achieving literacy, but more likely to increase personal efficacy.

Decisions about unwanted effects are further complicated by the lack of evidence on the social consequences of instructional technology projects. In the next section, we consider some intended and unintended effects which may be open to evaluation. However,

whether backed by subsequent empirical work or not, an evaluator should elaborate as best he can the values implicit in any project he is about to investigate.

III. EVALUATING THE IMPACT OF PROJECTS

Once having elucidated the internal and external objectives of an ITV project, no more important task confronts the evaluator than specifying what sorts of questions about that project he will attempt to answer. The derivation of such questions is never wholly free from outside pressures and constraints. Recognizing that certain kinds of research may be forbidden or made unduly difficult for political or cultural reasons and that limitations of time and money may restrict the scope of an investigation to but a few of the questions that may be in the evaluator's or his sponsor's mind, the former must be economical with his resources and prepared to concentrate them in areas which will allow him to achieve the basic purpose of his evaluation.

Criteria of Achievement of a Project's Objectives

Evaluation often implies the posing of different kinds of questions about a project. These questions ask about the success of a project in the five following ways:[3]

1. What has been the effort expended and received?
2. What has been the effectiveness of the project?
3. What has been its relative effectiveness?

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3 For similar treatment on a more general level, cf. Suchman (Ch.4), Bibliography, I.1.

4. What has been its efficiency?

5. What was the process of the project's achievement?

The first four questions are treated in this section, the fifth in the following section.

Effort:

At the most rudimentary level, the evaluator may wish to verify empirically that all project activities are actually taking place. Particularly in media systems that require new efforts to be expended at both the national (transmission) and local (reception) level, the coordination of such efforts constitutes a necessary condition to the project's success. For example, in Mexico's Telesecundaria system where secondary schooling is provided rural children via television, before assessing the quality of learning the evaluators wished to confirm that the television lessons were produced and transmitted on time and that classes were adhering to the broadcast schedule. The common experience of evaluators arriving unannounced at a school in the middle of a scheduled broadcast and finding the pupils still in recess or occupied with some completely extraneous activity underscores the necessity of this level of evaluation. In media systems purporting to serve non-school populations, the audiences are inherently less visible and less cohesive than the typical student group. The monitoring of local participation in such instances is necessary to determine whether or not the program is, in fact, reaching those for whom it is intended.

Effectiveness:

Once the evaluator has established that a particular project is indeed reaching its intended audience, other questions may be raised

about its effectiveness. Depending on the objectives of the evaluation and its scale, studies may be initiated to test whether desired outcomes have been obtained. In most evaluations, success has been defined in cognitive terms: students mastering new concepts, rural adults learning to read, mothers learning about new birth control practices. Frequently, other kinds of measures have been introduced to see how audiences reacted to the programs they received and whether or not their attitudes and aspirations changed in conformity with the project goals. In rare instances measures have been developed to determine if audience behavior has been affected in any lasting way by a project. Behavioral changes are perhaps the most difficult to evaluate because of the time limits imposed on any evaluation. In the case of mothers receiving birth control information via television, for example, one can test to see if essential information has been communicated effectively and if the mothers have been disposed to use it, but many years may be required to determine whether such a campaign has had any lasting impact on the birth rate in the listening area.

Relative effectiveness:

The task of evaluating a project's performance, whether in cognitive, affective, or behavioral terms may be further complicated by the fact that no specific criteria of success have been articulated beforehand. Planners, administrators, and others involved in an ITV project may have quite different ideas about what constitutes success, and their judgments are inevitably colored by their unique positions and responsibilities within a project. For this reason, and because objectives are rarely stated precisely at the outset, the burden of

defining success often rests with the evaluator.

Although success can be defined in many ways, most media system evaluators have relied on one or more of the following three criteria: impact on a target population, impact on a target population vs. a non-target population, and performance to some predetermined standard.

Returning to the example of a project teaching secondary subjects by television, success on the first criterion might consist of students simply being able to improve their scores on a test administered at the beginning of the year and then again at the end of the year. Such a before-after design can record the level of student achievement with television, but it cannot determine the effect of televised instruction per se.

To isolate the effect of televised instruction, evaluators often try to measure success in comparative terms. Did class A which studied with television outperform class B which did not? The validity of such a comparison depends on the evaluator's ability to study classes that closely resemble one another on all variables save the use of television, i.e. preparation and experience of classroom teachers, preparation and background of students, community support of the school, etc. The random assignment of students to television and non-television classes is perhaps the most effective way to insure comparability between instructional conditions, but random assignment is a difficult strategy to implement for administrative reasons.

The third and strictest definition of success is predicated on the existence of well defined objectives and performance criteria.

Success is here defined as a target population's ability to obtain a certain level of knowledge, reach a prescribed level of consensus on some subject, or exhibit certain behavior with sufficient frequency to fulfill project goals. While such an approach has proven useful in the construction of feedback tests as well as other shorter term evaluative instruments, project administrators have been reluctant to be held accountable for longer term social or even educational objectives which may be unrealistic to begin with and thus subject to considerable readjustment in the course of a project.

Efficiency:

Even with well-defined objectives, the evaluation of a project may still not provide policy-makers with the kinds of information they need to determine if results were obtained in the most efficient way. In fact, most evaluations of media projects have been of limited practical value to decision-makers because they have examined the effectiveness of only the single approach of media and have ignored possible alternative strategies for accomplishing the same objectives. When only one approach is analyzed, it is hard to be sure that it is the most effective one to pursue. Furthermore, even when alternative approaches are compared on some criteria and one is proved to be superior, it is still impossible to decide which approach to adopt permanently without considering costs. If a new approach proves superior to traditional alternatives but costs substantially more, it may be necessary for the evaluator to consider how the traditional approaches might perform were the same amount of money to be applied to improving them. While it may not be possible to examine thoroughly every

possible use of project funds, evaluators should be encouraged to investigate costs and effectiveness in terms of alternative strategies. Comparative cost-effectiveness analysis has proven to be the most useful framework for carrying out system evaluations of this kind.

Choice of Some Areas for Evaluation

We have stated that the evaluation of an ITV project must begin with a consideration of objectives. Because most ITV projects have multiple objectives - to improve learning, to extend educational opportunity, to interest students in new careers, to lower the unit costs of instruction, etc. - the evaluator must be selective about the effects he wishes to focus on. He must also be guided by a well-defined set of research questions, recognizing that such questions may not be appropriate to the evaluation of other projects. With this caveat in mind, it is possible to review the kinds of questions and variables evaluators of ITV systems have concentrated on in the past.

Student ability and achievement:

Because student learning is a major concern of educators, it has almost always been a concern in ITV evaluations. Two aspects of learning, general ability and achievement, have frequently been tested. General ability tests measure such things as students' reasoning, language, and problem-solving skills. In the design or evaluation of an ITV project, educators may want to know how such abilities are distributed within a student population. In many developing countries, rural children and children from poor families read less well and learn at a slower rate than do urban children and children from

privileged social groups. This fact can cause problems for the planners of new ITV systems and undermine the effectiveness of existing ones if evaluation shows that technology systems meant to close learning gaps may actually be widening them. Also, when ability tests are administered over a number of years as they were in the evaluation of El Salvador's ITV system,[4] they can reveal whether televised instruction has improved students' general abilities and whether or not any equalization trend has appeared between advantaged and disadvantaged groups.

Achievement testing in academic subjects has also been undertaken extensively in the evaluations of ITV projects. However, when course objectives have not been well defined or when standardized norms do not exist, evaluators have often had to develop their own achievement tests. This has usually proved to be a time consuming task, but one that is vitally important to the assessment of student learning with television. With adequate sampling and control procedures, achievement tests have been used extensively to compare the learning performance of ITV and non-ITV students and such tests should make it possible to separate out the unique contribution of televised instruction to the learning process, although this crucial step has not yet been taken in any of the major ITV evaluations.

Student attitudes and aspirations:

Evaluators of ITV projects have customarily paid close attention to the attitudes and aspirations of students to see what expectations the latter bring with them to school and how those expectations are affected by one or more years in a television class.

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4 Cf. final evaluation report on El Salvador under Hornik et al. in Bibliography, III.B.15.

The measurement of educational and occupational aspirations as well as attitudes toward ITV and schooling in general can help form a composite portrait of a changing student population. When examined over enough time and enough students, such measures can also be used to illuminate patterns in the relationships between student attitudes and background characteristics, ability levels, and learning outcomes. An awareness of changing student values and desires can alert planners early to the common problem of sharply rising student expectations and the spectre of future disappointment and frustration. With forewarning, planners should be in a better position to modify their projects or at least inaugurate counselling programs in the hope of stimulating student interest in more realistic academic and job opportunities. Unfortunately, few educational planners have heeded the results which evaluators have presented in this area and, as a result, most ITV projects have propelled students forward in the school system with too little concern for how they will eventually make use of their schooling.

Teacher attitudes and performance:

Although many ITV projects have been justified on the grounds that classroom teachers are simply not qualified to carry the full burden of instruction, few, if any, have replaced the classroom teacher. In fact, most projects have assigned classroom teachers the major responsibility for introducing and using television at the local level. For this reason, evaluators have paid close attention to how classroom teachers perceive ITV and how such perceptions change over time. Periodic surveys of teacher opinions have identified the kinds of teachers who feel they are having the most success with ITV, and in some projects evaluators have been able to relate teacher attitudes

toward ITV and toward the teaching profession to training levels as well as a variety of social and demographic variables.

What actually happens in the television classroom is another outcome of growing importance to ITV evaluators. It has been hypothesized that television teachers serve as models for their counterparts in the classroom and that modern teaching techniques can be spread through social modeling behavior over television, but there are few agreed upon criteria upon which to base such judgments and many differences of opinion still exist about what constitutes good teaching. As a first step in measuring classroom teaching behavior, the evaluators of El Salvador's ITV system developed a teacher observation form.[5] This instrument illuminated not only differences among teachers in terms of time spent lecturing and working with students, but also the "progress" of individual teachers toward the adoption of certain methods advocated by the project's planners.

Administrative policies and costs:

Far too often evaluators have focused their investigations on learning and attitude outcomes and have ignored the administrative aspects of ITV projects. Yet, when projects fail, it is usually because their administrators have been incapable of solving crucial problems. Little troubles go unnoticed and are soon magnified into major crises which, in turn, upset project timetables, discourage teachers and students, and eventually inhibit learning. To identify problem areas, evaluators have begun to turn their attention to the administrative history of projects. Using multiple data sources

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5 Cf. Bibliography, II.9.

including archival records, in-depth interviews with project leaders, and participant observation, efforts have been made to illuminate a project's major decisions as well as the crises that hinder its growth and effectiveness. Such histories can help guide decision-makers and provide useful information to other countries' planning to inaugurate similar projects.

Cost analysis, as we have suggested in the previous section, is another area that has been sorely neglected in most ITV evaluations. Budgets constrain all ITV projects, but few planners or administrators are provided with the kind of information needed to make better budgetary decisions. Problems of estimating true costs, of describing cost functions and their properties, and of introducing methods for coping with the temporal structure of ITV finance are just beginning to interest economists and such topics will undoubtedly become more important in future ITV evaluations.*

Long Range Effects and Unintended Consequences of ITV

There are unquestionably many other intended and unintended outcomes of an ITV project that help determine its ultimate success and significance. Even though an evaluator must be concerned primarily with the stated or inferred objectives of a project, he may still wish to devote some of his time and money to such neglected problem areas as the demands ITV places on teachers and school administrators, the relationship of project goals to outside economic realities and constraints, and ITV's impact on students and their families. Unfortunately, interest in such areas is relatively new, critical variables have not

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* Cf. Bibliography, II.6.

been adequately defined, and few empirical studies exist to guide new research. Despite these obstacles, however, evaluators are increasingly turning their attention to the problems of identifying and measuring some of the longer range effects and unintended consequences of ITV.

Effects of ITV in the classroom:

Beyond the attitudes and interactions of teachers and students which have interested evaluators of ITV projects in the past, it has been hypothesized that the introduction of classroom television may have longer term effects on the quality of social relations within schools. In the traditional school, the classroom teacher was the dominant force. He or she set the pace of instruction and was responsible for what was taught. With ITV, however, the typical classroom teacher no longer exerts such exclusive control. For the first time center stage must be shared with one or more "master" teachers whose lessons arrive at prescribed intervals via the television screen. The classroom teachers are forced to schedule their activities around such broadcasts. How does such an innovation and the changes in teaching styles it demands affect the authority and self-esteem of the classroom teacher? Are students more or less attentive to their classroom teachers when the latter act as monitors instead of subject experts? If, as has often been suggested, ITV permits school administrators to restructure the school day and/or to increase greatly the student-teacher ratio, will teachers be able to adjust to such changes, maintain respect, and still interact with students on a personal level? The answers to such questions have implications not only for the achievement of short term ITV objectives, but also for the survival of the school in its present

form - a subject which itself has come under heated debate in recent years.

Effects of ITV on a school system:

The long range effects of an ITV project on other aspects of a school system may also be of interest to an evaluator. Recognizing that a powerful innovation such as television inevitably requires some bureaucratic reshuffling, teachers and administrators may not be willing to implement policies that seem to undermine their freedom of action. In most traditional systems, classroom teachers and their principals enjoyed considerably autonomy. Such autonomy was usually as much a result of their school's distance from the capital city and its neglect by higher officials as any other factor. However, with the introduction of ITV, teachers and local administrators are customarily subjected to strong centralizing policies. Decisions affecting all television classes are formulated in central government offices and mandated throughout a school system. To insure the effective use of television at the local level, school supervision may also be reformed and expanded. While such changes are devised to upgrade the efficiency of an instructional system, their implementation often breeds teacher resentment. Teacher resistance to ITV in El Salvador, Mexico, and elsewhere has been demonstrated by heightened union activities and claims that television has been purchased at the price of improved teachers' salaries and working conditions. The impact of teachers' strikes and other political activities on the development of an ITV project are important developments whose short and long range consequences an evaluator cannot afford to ignore.

The importation of equipment and technical assistance as part of any ITV project may also have long range consequences on an educational system's personality and development. Virtually all ITV projects in the developing world have relied upon heavy doses of foreign hardware and expertise to get started. While some countries have been able to manage such resources competently, many others have either lost control or simply forfeited decision-making power to outsiders from the outset. The different patterns of foreign resource management and their relationship to institution-building activities within developing countries are subjects which should also concern an evaluator interested in assessing the effectiveness and survival potential of any ITV project.

Effects of ITV beyond the school:

Beyond the school, there is a wide range of individual, institutional, and social outcomes of any ITV project that could occupy an evaluation team for many years. In charting the vast unexplored territory beyond the immediate objectives of a particular project, the evaluator must be cautious in his approach and aware that the answers to many fascinating research questions are likely to remain outside his grasp. Nevertheless, with good theory and careful planning, he may be able to make significant progress in extending the boundaries of his evaluation and thereby make important contributions to knowledge and to the area of evaluation itself.

Neither ITV projects nor the larger school systems of which they are a part exist for their own sake. At the root of a nation's educational policies are basic beliefs concerning the importance of

schooling to economic productivity, social harmony, and individual happiness. Until recently, the faith in schooling as a social good was virtually absolute. However, the skyrocketing costs of providing even a few years of basic education to a nation's youth coupled with the radical questioning of established educational institutions and values have prompted both decision-makers and scholars to review their assumptions about schooling. For the first time, the promised benefits of schooling are being critically evaluated. The motivation behind such analyses and their content are directly relevant to the assessment of the long range outcomes of any ITV project.

One of the most fertile topics for research in recent years has been the linkage between schooling, job opportunities, and economic development. From a variety of disciplines has emerged the rather startling conclusion that the correlation between success in school and success on the job is not nearly as high as was once believed. Furthermore, there is a growing consensus among radical economists of education that the investment in certain kinds of educational innovations such as ITV has only aggravated an already intolerable situation by stimulating student desires for more schooling and preparing young people for careers that are simply not open to them. Critics warn that the distortions caused by excessive investments in schooling exacerbate existing inequities in a society and make needed structural reforms that much more difficult to achieve. It is far more difficult to convince young people to remain in the countryside, they argue, when a country's educational policies are drawing them inexorably to the cities.

If a long range result of an ITV project is to draw talented young people away from their rural origins, it will inevitably affect the social fabric of the rural community and, perhaps, the relationship between parents and children. In traditional communities and cultures, independence from one's family was frowned upon and young people were taught to abide by the authority of their parents. However, when young people enter school, they are confronted by new kinds of expectations and rewards, both intellectual and social. When school behaviors and values clash with traditional family norms, conflicts may arise between students and their parents vis-a-vis the former's ambitions and plans. Although some friction between the student and his family is inevitable and may actually be important to the young person's development, the radical critics of schooling question who really benefits when the student ultimately decides to pursue a life in "the modern sector." Is it the student who has succumbed to the attractions of urban life and the possibility of a better paying job away from his family, or others who control the wealth of a country and who count on the school system to socialize young people for work in an economic environment which they control? Questions of social equity, equal opportunity, and the relationship of schooling to development have become increasingly important to the evaluation of ITV as well as other educational innovations.

Who benefits?:

In designing an evaluation, the investigator begins with an independent variable - in this case television - and then defines and measures certain effects of that variable. With all the measures of

effects described in this section - cognitive, affective, and behavioral - the question can be asked: who benefits? Do students with high ability scores learn significantly more than those with low scores, urban pupils more than rural, boys more than girls?[6] If so, what are the implications for the development of television lessons and the materials that often accompany them? Are the gains in one subject notably greater than those in others? Are achievement patterns closely related to ability scores and demographic and social indicators?

If an evaluation is extended over a number of years, it is frequently possible to determine whether television has had any cumulative effect. To the extent that comparable measures are used from one year to the next, it is possible to see whether courses are operating more effectively or less effectively than before and whether a television system has altered in any way the relative achievement levels among ability groups. For example, did the addition of television help to equalize the achievement of rural and urban schools? Lower ability and higher ability students? In other words, what is the evidence that ITV has had any long range impact on a school system, and how can the answers to such a question be explained?

IV. EXPLAINING ACHIEVEMENT OF OBJECTIVES: PROCESS EVALUATION

Let us assume that an evaluator succeeds in measuring the achievement of the defined goals of an instructional technology project as outlined in the previous section. If we take a narrow view of the evaluator's task, we might be satisfied that he has come

6 Cf. Bibliography, III.B, 15 and 16 for some treatment of these points.

to a judgment about the value of the project (if his task is summative evaluation) or about short range success or failure (if his task is formative). His next task is to determine why the project succeeded or failed. For this he needs to understand better the process the project followed in its development.

Conditions of Success and Failure

Evaluations are more often concerned with examining the process of a project when there are failures than when there are successes because of a need to make someone accountable. Thus the emphasis here is usually in terms of why projects fail than why they succeed. The failure of ITV to bring about desired or promised effects may have several explanations. The effects promised may have been exaggerated, or the objectives may not have been achieved for reasons that need little sophisticated measurement. For example, an ITV project may never have reached the production stage, another project may never have gone beyond a few pilot classes, and a third may have been terminated after a trial period, all for reasons that stem from three closely interrelated environments: the classroom, the educational administration, and the political system.

The classroom environment:

The conditions one usually examines in a classroom environment to explain success or failure of an ITV project are most often related to the project's learning objectives. A first step is to describe as completely as possible how the unreached objective was to be achieved. For example, let us say that a particular project uses television in conjunction with a classroom teacher and student workbook to teach math.

In a given unit of material, each component (TV, teacher and workbook) is responsible for some proportion of the instruction. At the end of the unit, a test reveals that relatively few students learned what was expected. The evaluation outcome is straightforward - the system failed. The evaluator's job is now to understand why the failure occurred and to propose corrective measures.

The evaluator may first want to review the conditions that were believed to be necessary for successful learning. Certainly students had to be in attendance throughout the unit. They should also have been sufficiently nourished, not overtired from work after school, motivated for learning, and adequately prepared in math to understand the concepts being taught. Teachers should have arrived on time, maintained discipline in the classroom, and taught their share of the instructional load effectively. Television sets should have been working satisfactorily and lessons would have needed to be broadcast on time. Other preconditions to successful learning could surely be suggested. However, assuming that this list is exhaustive, the evaluator must determine which ones were not met. Many in the list can be eliminated with minimum effort. The evidence of technical failures - programs not broadcast, poor distribution of broadcast schedules or workbooks, and inadequate functioning of television sets - can be checked through school visits.

Comparing achievement in well-equipped and poorly-equipped schools can provide evidence on the physical learning environment. Measures of student attitudes toward school and mathematics may reflect motivation problems. Comparisons among students of different social

backgrounds may prove useful in examining the influence of students' background characteristics on learning.

After analyses of this sort, an evaluator may conclude that the television lessons did not present the concepts clearly or that teachers did not answer students' questions adequately. However, finding fault is rarely useful unless it can be accompanied by constructive suggestion. The evaluator may be forced one step backward to begin explaining failure at another level. What were the conditions precedent to the production of high quality telelessons: sufficient personnel, sufficient facilities, sufficient time, sufficient training, sufficient knowledge about the audience? What were the conditions precedent to effective teacher participation: positive attitudes toward teaching and television, sufficient training, sufficient knowledge of how to work with TV, sufficiently low student/teacher ratio? What were the conditions precedent to the preparation of adequate workbooks: sufficient coordination with teleteachers, opportunity for pretesting, sufficient trained personnel?

Thoughtful analysis of these prior causes may turn up additional reasons for failure. Two constraints on this sort of analysis are clear, however. First, if the evaluator's task is formative, he cannot possibly hope to analyze all the potential sources of failure and still provide decision-makers with the information they need to meet production deadlines. Second, the evaluator must try to distinguish between conditions precedent to learning that a project manager can and cannot control. Even though an evaluator should investigate whether the differences between rural and urban settings

affect learning from television, no project manager can directly change the poor conditions of the rural areas. His solutions may involve reversing patterns of resource allocation to favor rural areas or simply a recognition that some failures are just not soluble by educational decision-makers.

For the summative evaluator, many of the detailed analyses of particular course failures will be of less interest than broader studies of conditions precedent to success of a whole system. Describing all the conditions precedent is a complex and perhaps an impossible task. As a result, the summative evaluator may be unable to set up any exhaustive model of a project; rather he must explain success or failure somewhat intuitively, depending on his and other observers' knowledge of a project.

The administrative environment:

Evaluations are often so focused on the quality of the TV lesson or the amount of learning gain that students register during a semester with ITV that they may fail to see how the overall project is coping or failing to cope with keeping itself going. Yet instructional technology systems are extremely complicated to initiate and maintain. Many countries may not only lack technical production and broadcast personnel but may not have the management capacity for running a major technology project. Instructional systems that use technology are much more dependent on coordination of a series of elements than traditional teaching systems. Consequently, the chances of failure in one area affecting all areas is greater. What happens, for example, if there is a power failure at the transmission center? Are classroom

teachers trained to take over and teach the lesson? How are schedules rearranged? What if (as is common in many ITV projects) printed materials for the lessons - or even the schedule of broadcast programs - do not arrive on time? What happens to instruction if the inspectors cannot visit outlying schools in their district? How much do breakdowns in local receivers interfere with instruction and learning and how efficient is the maintenance service in repairing them?

Historically, project administration has remained largely outside the scope of most evaluations because most evaluators have been reluctant to consider it, preferring instead to concentrate on the quality of broadcast lessons (without a clear objective for the lesson being defined) or on the creation and administration of learning tests.

The importance of administrative evaluation is illustrated from recent studies in Mexico.[7] There two radio projects were evaluated over a six month period. During visits to a majority of the radio school sites, it was discovered that almost half the schools did not have an operating radio at all! To evaluate the quality of programming or the effect of radio instruction on students who may not be receiving programs in most cases is a waste of an evaluator's time. In both cases, the evaluators pointed out in their studies that the administration was not able to insure the system's continued operation.

The political environment:

The political conditions in which projects operate can also determine their success or failure. Television is an expensive

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7 Cf. Bibliography, III.B, 19, 20.

technology and often involves spending large amounts of public money on hardware and personnel. It also involves access to a large audience via a powerful means of communication. Moreover, it deals with education and the socialization of young people in the values of their society. For these and other reasons, ITV projects are politically sensitive and subject to many different stresses that may affect the achievement of its stated objectives. Since ITV projects often demand the import of foreign hardware as well as technical assistance, to what extent is a project affected by the political pressure of the donor agency or country or a multinational corporation that may be selling hardware? How can an evaluator estimate the extent to which the values and models of schooling from outside the country affect the plans of the indigenous ITV group? Who makes the essential decisions for the project and how do these affect the outcomes? Indeed, how are the goals and objectives set for the ITV project in the first place? All of these are questions touching on the political conditions of a project and should be taken into account by an evaluator who wishes to be complete in his explanation of project performance.

Evaluation's Interdisciplinary Approach

To explain the success or failure of a project using instructional technology evaluators need to pay attention to a much wider range of factors in systems than has been their practice. School and classroom, administrative, and political factors can dramatically affect the learning outcomes of instructional technology. An evaluator must understand administrative and political processes of a system as well as measure its specific outcomes. This expanded notion

of evaluation also calls for a team approach to evaluation where people from a number of disciplines will attempt to monitor different dimensions of a project.

V. DECIDING WHAT TO EVALUATE

The evaluation of instructional technology projects is in many ways a new concern for education and communication researchers. If there were a long history of research in this area, evaluators would be tempted to look for a cook-book approach where appropriate procedures are laid out for them. This is not the case for evaluating large technologies, however, where relatively few experiences have been recorded for others to follow. There have been a few evaluations undertaken - in El Salvador, Mexico, the Ivory Coast, and Samoa - but the present authors, having participated in some of them, realize that they constitute only a beginning and not a final guide to action. How, then, is the evaluator to decide what he will evaluate in a particular project?

The Funding Source

When funding is made available for an evaluation, we presume that some needs have been expressed by the funder. The U.S. government was interested in determining whether or not El Salvador's use of educational technology would be a good investment for other countries and therefore supported a summative evaluation of this project. Because costs of such systems are so large, other international agencies have similar questions. Thus governments as well as international organizations

such as the World Bank and Unesco are interested in studying the educational effectiveness of the instructional technology projects. The French government funded an evaluative study of its Tele-Niger project after six years of operation in the field. The Mexican Secretariat of Public Education helped fund a study of its Telesecundaria project five years after it got under way to know how it was functioning and whether evaluation could help improve its operation or suggest new ways to reach rural secondary students. There are many other examples of governments and international lending agencies showing keen interest in knowing how educational technology is working.

The problem for the evaluator is that even when a funding agency is willing to invest a considerable amount of money in assessing a project, the agency may not really know what it expects from the study. There may be unrealistic expectations as to what an evaluation can demonstrate. Evaluators themselves may not realize the relatively primitive state of the art in the field or, in their eagerness to become involved, overstate what they can accomplish. An evaluator must be clear in his own mind about what he can deliver and then help define realistically what a funding agency can expect from him. If this is not done, disappointment may result and efforts to develop a better evaluation model may be undermined.

Although the evaluator must seek some general guidance from his sponsors about what is expected of him, he should not expect a blueprint for his work. Needs may be defined in terms of efficiency - "Does ITV really solve the problem of significantly increasing secondary schooling at lower unit cost than traditional methods?"; and/or in

quality terms - "What can you do to help make the ITV programs better?" The evaluator needs to assess and define the goals of the funding source as best he can and see how they fit in with his own ideas of what the problem is and what the needs are. He cannot only consider the source of funding for guidance in choosing an evaluation focus if the users of his evaluation are different from the funders.

Potential Users

The question, "Who will use my evaluation study and how?" is perhaps the best guide for evaluators. Unfortunately, this question has not often been asked and the resulting underutilization of evaluation results is the fault of both evaluators and decision-makers.[8] On the part of evaluators, the problem has often been that they decided unilaterally what aspects needed evaluation and, once their work was finished, reported their results in long and jargon-filled documents for busy administrators or producers who had no time to read them. Evaluators often have not assessed real needs where their work might make a useful contribution and have ignored the necessity to communicate this knowledge in a manner that will most likely reach the user. On their side, decision-makers can be faulted for viewing evaluation as a necessary evil or, worse still, as a public relations arm of their projects. They may have no intention of heeding the evaluator's findings, especially if those results are the least bit critical.

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8 Although Stufflebeam (Bibliography, I.2) speaks of evaluation keyed to decision-making, House (Bibliography, I.2) points to the large gap between the ideal and the real usefulness of evaluations to decision-makers in education.

How can such problems be resolved? First, the evaluator must try to target his work toward real information needs. This means he must work with potential users and see what information they must have to make decisions. In formative evaluation strategies, work might concentrate on a key policy area. If, for example, ITV was adopted on the premise that it would provide secondary education for rural youth and thereby decrease their desire to migrate to large urban areas in pursuit of post-primary schooling, an evaluator might base his shorter-term study on the problem of why rural primary graduates migrate and, on a longer term basis whether, indeed, ITV has helped resolve this problem. An evaluator wanting to create a learning feedback system for producers of the TV lessons may first have to show producers how their programs relate to learning and how improvement in learning is tied to improvements in production quality.[9] Furthermore, producers often have no clear learning objectives for their TV lessons and so have no way of incorporating feedback results into their production. In El Salvador, it took three years before a seminar in formative evaluation and definition of learning objectives, with production and evaluation teams participating, brought some common understanding to the task of testing and production.

Often overlooked in the well-meaning efforts of international agencies to generate evaluations is the problem of doing useful evaluation. Part of the effort to promote better evaluations must focus on the decision-maker and his education as an information user. An evaluator must realize that political and administrative factors

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9 Cf. Bibliography, IV.25.

play a predominant part in decisions along with personal pressures on the decision-maker. In addition to doing research, the evaluator must insure that his results are given a hearing by the decision-maker. This may call for a reorientation of the administrators' approach to problem solving. In so doing, the evaluator is not trying to personally direct decisions but rather he is seeing to it that evaluation results at least enter into decisions. This process demands that the evaluator work closely with those whose decisions he is trying to provide information for, be they administrators, program producers, supervisors, or teacher trainers.

The Constraints

The evaluator must work under a number of constraints. The most common, although not perhaps the most critical, problem is money. Many ITV projects have acceded to pressures from funding agencies and created evaluation units, but have not then provided them with adequate budgets. There are numerous examples of ITV projects with a number of teachers assigned to evaluation. Lacking both funds and training, the teachers' work is often limited to filling out forms on the "quality" of the programs or to observing classrooms (usually classrooms in the capital of the country where conditions are quite distinct from most other parts). What is often not understood by funders is that the training and financing of field workers costs money. Communications, transport, and printing all add to the cost of evaluation. An evaluator must review his budget before planning an elaborate study that may be impossible for financial reasons. Unrealistic plans are not uncommon among ITV

evaluators who may be restricted to their offices by lack of operating funds. Their jobs often become a kind of fantasy of what they would like to do instead of what they can achieve in their circumstances. If the evaluator has a clear idea of the goals of his work, he should calculate exactly what he can accomplish given his budget, or fight to increase that budget to accomplish what is necessary.

There are constraints in both number and training of evaluation personnel. A ministry of education may have a number of teachers on a payroll that can be loaned to an evaluation unit, but without at least one or two well-trained evaluators, the added numbers will do little good. The lack of well trained people may be the key constraint in limiting the effectiveness of most ITV evaluations.

The final, basic constraint is time. An evaluator trying to plan his work must set deadlines and stick to them if his findings are to enter into the decision-making process. Too frequently evaluation is allowed a leisurely pace not permitted in other parts of the system. This may give the impression that evaluation is not to be taken seriously and has nothing to do with them. Producing valid and reliable evaluation information on schedule is one of the most difficult tasks of the evaluator. The evaluator must be a careful organizer both of his time and that of his staff. Some sort of adaptation of management planning methods should be part of his repertoire of abilities if he is to meet deadlines. Too often we hear of an ambitious school testing program undertaken with enthusiasm but without sufficient planning. Delays, oversights of coding or analysis costs, overestimations of ability to get things done, all lead to long delays that make results

of historical value only and thus confirm the suspicions of decision-makers that evaluation is a useless academic exercise. A small evaluation effort carried out well with relevant information delivered on time should convince a decision-maker that evaluation can be an integral part of his project and one that should be paid attention to.

A Practical Decision

Even when all of the above factors are taken into consideration, it is still the evaluator who must make the practical decision of what to evaluate. What guidelines might he look for in this decision? Other evaluations will obviously guide him to some degree since he might feel more secure doing something that others have successfully done before him. This might lead him to measure learning, or attitudes, or the effectiveness of a pretesting system, or the creation of a feedback mechanism for monitoring student progress on a unit of a given curriculum. The literature to guide the evaluator of instructional technology projects is relatively scarce as the bibliography attests, although there is a large literature on curriculum and school evaluations that can give some guidance.[10]

The essential point is that evaluations need to cover new areas that are difficult and sometimes sensitive. More needs to be done with cost measurement and cost models, for example.[11] The examination of the affective area of learning with ITV should also be a focus of new evaluations even though it is clearly understood that measurement is apt

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10 Cf. Bibliography, II.

11 Cf. Bibliography III.B.16 and II.6.

to be very primitive at first.[12] The models and cultural heroes presented to student audiences need to be examined critically vis-a-vis their impact on the learning and cultural objectives of a project. If an ITV project proposes to encourage students to remain in the rural areas but reinforces urban models in its TV lessons, the evaluator should be able to show the contradiction between means and ends.

The administrative history of a project is a new and difficult area for evaluation, but a vital one for most large technological projects. The impact of an ITV project on the social and economic standing of its students is a common argument in selling the project to the public, but few evaluators have had the time or inclination to critically examine the achievement of these goals. The longer run benefits of ITV are some of the most crucial ones, but often evaluation of them is discontinued long before they can be measured or reported. Since costs are heavily concentrated at the start of an ITV project, these loom large in comparison with rather insignificant short-term effects. Finally, because evaluation is often defined by those who expect some specific problem to be solved, evaluators are tied to testing for these effects and are not allowed the freedom to look for unexpected effects. All of these areas are relatively unexplored, especially within ITV projects, and thus detailed guidance is not available. It may be that those with more experience should be the ones to undertake these more challenging areas while others perfect their skills and gain experience in applying the better tested methods.

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12 Cf. Bibliography, IV.21.

VI. CONCLUSIONS AND RECOMMENDATIONS

We have presented in these pages a great many things for the evaluator to do, but we have not tried to push him in one direction. Evaluation is a relatively new discipline, and it has not developed for itself an image, much less acceptability in many surroundings. Somewhere between an art and an applied science, evaluation and the evaluator mean many things to different people. The evaluator is most likely to be someone trained in anything but evaluation, a psychologist or sociologist, perhaps, or an economist, engineer, or teacher. He will have to learn his new metier on the job most likely and define his role for those he works with.

The role of information in guiding decisions is not, of course, new to human behavior. But in large and complex institutions where many people must cooperate and many factors be made to mesh to achieve a common goal, there is critical need to have a system of feedback to help correct and adjust the institution. Evaluation is not only a mechanism for gathering the appropriate information in the most reliable way but of seeing to it that the information is communicated to those who will make decisions. The evaluator, or the person who coordinates the evaluation, must act both in the role of objective social scientist in gathering information, and skilled manager in seeing that information reaches persons who most need and will use it.

We might end this essay with a summary of what we have said to the evaluator by way of some brief recommendations:

(1) Evaluation ought to be an integral part of the ITV project plan itself; that way, it can grow with the project and not be added

on as an afterthought;

(2) The evaluator should help planners to define their short and long term goals, specify internal and external objectives and clarify value positions within the project plan;

(3) The evaluator should not overlook those aspects of the project that go beyond defined goals and which are related to unintended results;

(4) Improving the methods of cost analysis is one of the most important areas for future evaluations;

(5) In choosing what aspects of the project to evaluate, the evaluator should balance those that seem most urgent for decisions with those that seem most critical for the survival of the project; the two are not always the same;

(6) Although the constraints of money, time and trained personnel are all critical, the evaluator has most control over time and should try to work within reasonable time frames and meet deadlines important for decision-making;

(7) Communication of results to those who can use them in a way in which their use is most assured should be as important to the evaluator as the careful gathering and analysis of his data.

APPENDIX : BIBLIOGRAPHY

Note: The purpose of this bibliography is to be illustrative of sources, available in English, that form a background to the present essay. The essay attempts to synthesize the relevant literature and put it into a practical framework of action for the field evaluator. If he is already a trained researcher in a social science discipline, he can put his knowledge to work with some help from additional reading; if he is not trained in research, this bibliography probably will not be of much help. It is not meant to be exhaustive in any area except in the precise one of the essay's subject, evaluation of ITV in developing countries. Here we have searched the published sources rather thoroughly and have found little available. Hence our hope that this essay will help to fill a void. Other, more general areas like evaluation methodology or educational research have extensive bibliographies, of which only a small sampling is included.

I. General Evaluation Methodology

1. Suchman, E., Evaluative Research: Principles and Practice in Public Service and Social Action Programs. New York: Russell Sage Foundation, 1967.

   A basic well written text on evaluation, using examples from health projects in the U.S., but presenting principles with general applicability. A briefer and more recent paperback book of the same general kind is Weiss, C.H., Evaluation Research: Methods for Assessing Program Effectiveness. Englewood Cliffs: Prentice Hall, 1972.

2. Some other examples from the growing field of evaluation literature:

   Bloom, B.S., Hastings, J.T., and Madaus, G.F., Handbook on Formative and Summative Evaluation of Student Learning. New York: McGraw Hill, 1971.

   Caro, F.G. (ed.), Readings in Evaluative Research. New York: Russell Sage Foundation, 1971.

   House, E.R. (ed.), School Evaluation: The Politics and Process. Berkeley, California: McCutchen, 1973.

   This book stresses the problems with the many large-scale evaluations of schools in the U.S. Gives perspectives on the areas of evaluation outside that of student learning.

Rossi, P., and Williams, W., Evaluating Social Programs: Theory, Practice and Politics. New York: Seminar Press, 1972.

Stake, R., "The Countenance of Educational Evaluation", Teachers College Record 68 (1967), pp.523-540.

Scriven, M., "The Methodology of Evaluation" in R.E. Stake (ed.), Perspectives of Curriculum Evaluation. Chicago: Rand McNally, 1967. AERA Series on Curriculum Evaluation, no.1.

Scriven, M., "Goal Free Evaluation", in House (ed.), School Evaluation, op.cit., ch.24.

Stufflebeam, D.L., et al., Educational Evaluation and Decision Making. Itasca, Illinois: Peacock Press, 1971.

Wittrock, M.C., and Wiley, D.E. (eds.), The Evaluation of Instruction: Issues and Problems. New York: Holt, Rinehart and Winston, 1970.

II. Specific Evaluation Methodology

3. Bloom, B.S., A Taxonomy of Educational Objectives: Handbook I: Cognitive Domain. New York: David McKay, Inc., 1956.

An early attempt to identify different kinds of learning in the classroom.

4. Campbell, D., and Stanley, E., Experimental and Quasi-experimental Designs for Research. Chicago: Rand McNally, 1966.

A classic discussion of design problems in social research.

5. Cronbach, L., Essentials of Psychological Testing. New York: Harper and Row, 1969 (3rd ed.).

This is a basic text in testing theory and practice.

6. Jamison, D.T., and Klees, S., The Cost of Instructional Radio and Television for Developing Countries. Stanford: Institute for Communication Research, Stanford University, March, 1973.

Basic methodology of cost analysis for technology projects, along with analyses of eight projects.

7. Kerlinger, F.N., Foundations of Behavioral Research: Educational Psychological Inquiry. New York: Holt, Rinehart and Winston, 1972 (2nd ed.).

A comprehensive text in research methods, not for beginners.

8. Mager, R.F., Preparing Instructional Objectives. Palo Alto, California: Fearon Publishers, 1962.

9. Rosenhein, B., Teacher Behavior and Student Achievement. New York: Humanities Press, 1971. I.E.A. Studies, No.1.

   A basic review of many studies of teacher behavior in class as it relates to outcomes in learning. Other studies worth noting are two field tests with ITV:

   Mayo, J.A., Teacher Observation in El Salvador. Stanford: Institute for Communication Research, Stanford University, February, 1971.

   Mayo, J.A., Teacher Observation in Mexico. Stanford: Institute for Communication Research, Stanford University, May, 1973.

   A summary of some of the literature and some policy implications in:

   Rosenhein, B., and McGaw, B., "Assessing Teachers in Public Education" in House (ed.), School Evaluation, op.cit., ch.12.

10. Schramm, W., "Feedback" for Instructional Television. Stanford: Institute for Communication Research, Stanford University, December, 1969.

    Brief treatment of the range of feedback methods for ITV.

11. Tuckman, B.W., Conducting Educational Research. New York: Harcourt, Brace and Jovanovich, 1972.

    A brief text on educational research methods; brief but meant for beginners in the field.

12. Woods, D.A., Test Construction. Columbus, Ohio: C.E. Merril, 1960.

    Only an example of many practical approaches to achievement test construction.

III. Planning and Evaluation of Technology

A. Planning

There have been few ITV projects that have planned and published plans for their projects. Some examples of plans that also include evaluation may be helpful to planner/evaluators.

13. Korea: Systems Analysis for Educational Change: The Republic of Korea. Morgan and Chadwick (eds.) Tallahassee: Florida State University Press, 1971.

    An example of systems analysis approach to planning an educational technology project.

    Brazil: SACI Project: Project Review Meeting. Washington, D.C.: NASA, April, 1972.

The outline of planning for major field experiment using educational technology in Brazil's Northeast. (Update of progress in English: Pulcherio, A., "The SACI Project and the Educational Experiment of Rio Grande do Norte". Paper given at American Association for the Advancement of Science conference, Mexico City, June 1973.)

Ivory Coast: Ivory Coast Rep. and Unesco: Actualisation du programme d'éducation télévisuelle: 1973-1976. Paris/Abidjan: Ivory Coast Rep. and Unesco, 1973.

An update of the original planning volume of large ITV project for primary school in Africa.

B. Evaluations

There have been few evaluative studies of ITV or radio projects that the present authors have been able to find. These represent most of those available at present.

14. Comstock, G., and Maccoby, N., The Peace Corps Educational Television Project in Colombia - Two Years of Research: Overview. Stanford: Institute for Communication Research, Stanford University, 1966.

This volume summarizes 10 separate reports on an ETV project; most of the research concentrates on evaluating the Peace Corps role in the project.

15. Hornik, R., Ingle, H., Mayo, J.K., McAnany, E., and Schramm, W., Television and Educational Reform in El Salvador: Final Report. Stanford: Institute for Communication Research, Stanford University, August, 1973.

Reports results of a four year comprehensive evaluation of El Salvador's ITV project. Most complete published to date.

16. Mayo, J.K., McAnany, E., Klees, S., The Mexican Telesecundaria: A Cost-effectiveness Analysis. Stanford: Institute for Communication Research, Stanford University, March, 1973.

Reports results of a year's evaluation of Mexico's ITV project to extend secondary education to rural areas; only evaluation to attempt to compare costs of traditional and ITV schooling.

17. Schramm, W., ITV in American Samoa - After Nine Years. Stanford: Institute for Communication Research, Stanford University, March, 1973.

First evaluation report on an early ITV project with empirical data.

18. Schramm, W., Coombs, P., Kahnert, F., and Lyle, J., Memo to Educational Planners and New Educational Media in Action: Case Studies for Planners. Paris: Unesco/IIEP, 1967 (4 vols.)

An overview and three volumes of case studies reporting on a number of radio and television projects in developing countries.

19. Schmelkes de Sotelo, S., The Radio Schools of the Tarahumara, Mexico: An Evaluation. Stanford: Institute for Communication Research, Stanford University, March, 1973.

20. Spain, P., A Report on the System of Radioprimaria in the State of San Luis Potosi, Mexico. Stanford: Institute for Communication Research, Stanford University, March 1973.

IV. General Studies of Educational Media

21. Ball, S., and Bogetz, G., The First Year of Sesame Street: An Evaluation. Princeton: Educational Testing Service, 1970; The Second Year of Sesame Street: A Continuing Evaluation (2 vols.). Princeton: Educational Testing Service, 1971; Reading with Television: An Evaluation of the Electric Company (2 vols.). Princeton: Educational Testing Service, 1973.

A comprehensive evaluation of two well known educational TV series in the U.S. For comment on these evaluations cf. Yin, R.K., The Workshop and the World: Toward an Assessment of Children's Television Workshop. Santa Monica: Rand Corporation, October, 1973.

22. Chu, G., and Schramm, W., Learning from Television: What the Research Says. Washington, D.C.: National Association of Educational Broadcasters, 1968.

The most comprehensive review of ITV research to 1967 that is in wide circulation.

23. Jamison, D.T., Suppes, P., and Wells, S., The Effectiveness of Alternative Instructional Media. Stanford: Institute for Communication Research, Stanford University, March, 1973.

A review of research literature on effectiveness of traditional teaching, instructional radio, programmed instruction, CAI and ITV.

24. Schramm, W., Big Media, Little Media. Stanford: Institute for Communication Research, Stanford University, March, 1973.

Comprehensive review of uses of technology for education in developing countries, including chapters on open learning systems and lower cost technology as well as ITV.

25. Schramm, W. (ed.), Quality in Instructional Television. Hawaii: East-West Center Press, 1972.

APPENDIX A: Sample Instruments

A. Introduction

The inclusion of sample measurement instruments below should be understood within the context of the preceding remarks on "What should be evaluated?". We have stated that there are many aspects of a television project that could be evaluated; the evaluator must decide which aspect(s) he or she will research. The sample of instruments presented here will not touch all possible aspects either of the research we have done or of the research others might wish to do. Moreover, it would be irresponsible to suggest that the sample instruments presented below are appropriate for use by others. The selection and development of evaluative instruments must be guided by considerations of goals by cultural appropriateness as well as by a realistic appraisal of the methodological problems of validity and reliability. Such problems make us hesitant to suggest this appendix as an easy "how to" approach.

What we hope to do is to present to readers instruments that have been used for different purposes to give them a more concrete notion of how various aspects of ITV projects (attitudes, achievement, teacher behavior, etc) have been evaluated in the past.

B. Research Process

Evaluators need to understand the broad range of options for examining television before deciding on the particular aspects that they think are most important to their particular project. But once evaluation goals are set, there is a set of procedures than an evaluator needs to follow. These steps are not peculiar to ITV but are appropriate to most types of social research:

(1) Sampling so that the individuals, classrooms or schools selected accurately represent the population to which one wishes to generalize the inferences made with regard to that sample (example, is a research conclusion that ITV is better than traditional instruction based on a given sample of students valid for the whole school system or whole potential school audience of ITV?);

(2) Creating a design for the evaluation that would permit valid inferences about the sample with respect to research hypotheses (example, were differences in achievement between ITV and non-ITV classrooms the result of ITV, or the result of assignment of ITV to classrooms with smarter students);

(3) Conceptualizing, explicating, and operationalizing variables in the research task (example, arriving at a satisfactory idea of what "urban migration" means and then choosing appropriate indicators in the context of the phenomenon);

(4) Creating valid and reliable instruments for measuring a particular phenomenon (example, although there is much concern with self esteem and attempts to create measures of it, few examples of a reliable measuring instrument exist);

(5) Carrying out the data gathering in such a way as to guard against bias or error (example, even when a reliable and valid instrument for measuring teachers attitudes exists, interviewers may use it incorrectly);

(6) Having an appropriate way of analyzing results so that valid conclusions can be made (example, how can the influence of ITV be shown to be related causally to gap closing of achievement between rural and urban students).

These steps schematically summarize an unwritten but essential essay on the process of evaluation. All of these steps are assumed in creation or adaptation of instruments. (The bibliography, especially parts I and II, is concerned with these questions).

Readers will correctly note that evaluation research of the kind we are dealing with here has been largely generated and used in specific settings; we do not suggest that these are the only approaches appropriate to satisfy evaluation needs. Secondly, not all suggested areas of research need generate quantitative data. There is often a need to gather qualitative data to understand a television project's success or failure (example, administrative history or the political aspects of using technology). We give no examples of the latter but for reference we suggest readers consult Mayo and Mayo, An Administrative History of El Salvador's Educational Reform (Research Report No.8, November 1971; Stanford: Institute for Communication Research).

C. Instruments

The following pages describe a range of instruments used in our work on television projects in El Salvador and Mexico. They represent the following areas of evaluation: cognitive achievement, program series feedback among teachers, ITV and other social attitudes of students and teachers, demographic questions for teachers and students, classroom observation, school-community inventory, student follow-up, and parent aspiration for students. Although cost analysis is an important aspect of good evaluations, there is no available sample instrument that would give readers a proper idea of the effort required. Readers will observe in Jamison with Klees (bibliography, II, 6) and Mayo, McAnany and Klees (bibliography III, 16) that cost analysis depends on a variety

of methods including some survey questionnaires.

1. Cognitive Achievement (Mexico)

Achievement testing is one of the most common concerns in ITV evaluations. Sometimes test and measurement experts are available, often they are not. The tests used in the Mexico Telesecundaria evaluation (Mayo, McAnany, Klees, 1973) were produced by different groups within the Secretariat of Public Education. Those used in El Salvador were prepared by the Educational Testing Service at Princeton, New Jersey based on Salvadoran curricula, and later by evaluation personnel in El Salvador. As various reports cited in III.B of the bibliography show, analysis of achievement data should be done in terms of a series of demographic and environmental factors to see not only whether the group with ITV learns more or less than others but also what kind of students benefit the most from new technology. No example is reproduced here since such tests are available almost universally, and in general are not specific to ITV projects.

2. Attitudes of students (Mexico) and teachers (El Salvador)

Student and teacher attitudes are often a concern of administrators of ITV projects. We distinguish here between general attitudes concerning the use of television in the classroom and opinions about specific TV series (in section 3, below). Again, the evaluator must define what goal he/she has in mind for trying to measure attitudes before creating an instrument. The instruments presented below (pp.12-13 : questions 21-23, pp.28-29 : questions 42-48, pp.33-34 : questions 1-14) were appropriate to research goals of two concrete projects. Readers can see how they were used in the several reports on El Salvador (final summary report, Hornik, Ingle, Mayo, McAnany, Schramm, 1973) and Mexico (Mayo, McAnany, Klees, 1973).

3. Teachers' and students' opinions about specific TV series

Asking teachers or students what they think about a specific TV series is a common and seemingly straightforward task in many ITV projects. Problems of creating a good instrument and reliably gathering and summarizing data are formidable, but our knowledge of many such projects suggests that making this information useful for program modification and improvement is even more difficult. The latter problem was not solved in El Salvador or in Mexico; nevertheless, the following instruments (pp.29-31 : questions 49-58, and pp.40-42, as well as some exploration of uses in Chapters 3 and 6 of the final El Salvador report, Bibliography III, 15) may be useful to readers.

4. Social attitude and behavior of students and teachers

Attitude questions such as those referred to above are specific to ITV projects, obviously enough. However as the text makes clear, it is often valuable to utilize a much broader range of social attitude and behavior questions in evaluating outcomes of ITV or other media-based projects.

Student questions may refer to aspirations (pp.14-19 : questions 34-57, and pp.24-26 : questions 20-32) or to other specific social attitudes (pp.27-28 : questions 33-41). Behavior of interest may include access to and use of mass media outside of school (pp.10-12 : questions 10-20, and pp.22-25 : questions 12-17).

For teachers, one might want to include questions concerning general attitudes toward teaching and education (pp.34-35 : questions 15-27) and about specific aspects of the schools (pp.37-38 : question 29).

5. Demographic and other background information about students and teachers

Background information about students and teachers (and their schools and communities - see below) can prove highly useful in understanding both the context of an ITV project, and its success or failure.

Use of such information has been extensive in analyses and interpretations of both Mexican and El Salvadoran project data (cf. Bibliography III, 15 and 16). Instruments which can be used to gather the information will vary; wording and approach will depend on the specific cultural context. Both students (pp.9-10 : questions 1-10, and pp.20-22 : questions 1-11) and teachers (pp. 38-39 : questions 30-33) may be asked to supply such background data. However, probing too deeply into personal matters may be unacceptable, whatever the beneficient use the researcher plans to make of the data. Primarily, ethical questions concerning invasion of privacy are properly raised. In addition, barging insensitively into intimate preserves may create resistance and thus affect the validity of responses to these specific questions, and to the questionnaire as a whole.

6. Classroom observation

There are a number of reasons for conducting systematic observations of what is going on in ITV classrooms. Trying to observe in a systematic and reliable way is a first goal.Trying to describe what the teacher and students do is one level of the effort. A further goal is to relate this observed behavior to how well students learn (achievement). The form printed below (p.43) has been used for both tasks (as reported by Judith Mayo in Teacher Observation in Mexico (cf. bibliography, II, 9)). In addition to questions of the appropriateness of this form to different ITV projects, readers should note that the administration of the form demands careful training in order to obtain reliable data.

7. School-community inventory (El Salvador)

School and community environments often differ widely within national or regional educational systems. One argument favoring ITV is that this is one resource that is shared equally by all schools. To

understand the influence of environment on learning, the evaluator needs appropriate measures of factors that differentiate schools and communities. The instrument below (pp.44-50) was used in El Salvador to gather data on what were thought to be important factors in the learning environment. The data collected were not useful in raw form for making important conclusions about learning and the role of television; it was only afterward at the analysis stage that appropriate indexing could bring out the full import of the data (cf. Chapter 5, final El Salvador report).

8. Student follow-up study (El Salvador)

The study of what happens to graduates of any school system is a critical question bearing on the external efficiency of the system. In both Mexico and El Salvador limited efforts were made to follow graduates of the respective ITV systems. What is important about the problem is not the instrument itself (thus no instrument is reproduced here) but rather the tasks of sampling the population and gathering the data at a reasonable cost. Neither problem was satisfactorily solved in the two projects mentioned above, but in El Salvador a large sample of graduates was located at considerable cost in effort and time.
A report on the results of the follow-up study can be found in H. Ingle et al., Follow-Up Study on the First Group of Ninth Grade Graduates (Stanford, Institute for Communication Research, 1973).

9. Parent aspirations for their children (El Salvador)

What education and careers students aspire to has important consequences for their country. Traditionally, the study of aspirations has been carried out solely on students (as reported in both Mexico and El Salvador studies). It was felt that students' aspirations were a result of a number of influences including school (ITV), teachers,

and perhaps most importantly parents. Reaching parents to ascertain their ideas of school, ITV and their children's future is not an easy task. Again, the creation of a valid and reliable interview instrument (pp.51-63) is perhaps less difficult than reaching a good sample of parents and analyzing results in an appropriate way. Some appropriate discussion of these problems is found in Chapter 4 (final report) and Chapter 5 (in Hornik, Ingle, Mayo, McAnany, and Schramm, Complete Report on the Third Year of Research, Research Report No.10 (Stanford, Institute for Communication Research, 1972)).

STUDENT QUESTIONNAIRE (EL SALVADOR, 1970)

Full Name_____

Name of School_____

Grade_____ Section_____

INSTRUCTIONS: THIS IS NOT A TEST. THERE ARE NO CORRECT OR INCORRECT ANSWERS. WHAT COUNTS IS YOUR OWN OPINION. PLEASE ANSWER WITH SINCERITY.

Each one of the following questions has one or more answers. Put an "X" in the blank that corresponds to your answer. In those cases for which you are asked to fill in information, do so in the appropriate space.

Section I: General

1. Age: _____Birthdays completed

2. Sex: Female_____
   Male _____

3. Date of birth_____
   Day Month Year

4. Write the total number of people who live in your house (including yourself and servants, if there are any):

   _____Total number

5. Of the following people, which ones live in your house?

   _____mother
   _____father
   _____brothers and sisters
   _____grandparents
   _____other relatives
   _____others who are not relatives

6. What is your father's occupation?_____

7. What is your mother's occupation?_____

8. Indicate your parents' level of education:

	Father	Mother
Didn't study	_____	_____
Part of primary	_____	_____
All of primary	_____	_____
Plan Basico	_____	_____
Commerical course	_____	_____
High school	_____	_____
University	_____	_____

9. How long does it take you to get to school every day?

Less than 15 minutes _____
Between 15 and 30 minutes _____
Between 30 minutes and an hour _____
More than an hour _____

Section II

10. Of the following information media, which do you have at home?

_____newspapers
_____magazines
_____radio
_____television
_____books

11. Outside of school, how many times did you watch television last week?

_____never
_____one or two times
_____three or four times
_____five or six times
_____every day

12. Approximately how long do you listen to the radio each day?

_____never
_____less than an hour each day
_____one or two hours each day
_____three or four hours each day
_____more than four hours each day

13. How frequently did you read newspapers last week?

_____never
_____one or two times
_____three or four times
_____five or six times
_____every day

14. How frequently did you read magazines last week?

_____never
_____one or two times
_____three or four times
_____more than four times

15. How many books did you read last year?

_____none
_____from 1 to 3
_____from 4 to 10
_____more than 10

16. How frequently did you go to the movies last month?

_____never
_____one or two times
_____three or four times
_____more than four times

17. Where do you usually see commercial television?

_____in your house
_____in a friend's house
_____in the house of relatives
_____in some other place

18. What is your favorite commercial television program?

_____

19. What day or days is that program on?

_____

20. How often do you see each one of the following programs?

	Every week	Once or Twice a month	Rarely	Never
A. Tarzan	____	____	____	____
B. Tom Jones	____	____	____	____
C. Oficina para todos	____	____	____	____
D. Tierra de gigantes	____	____	____	____

Section III

INSTRUCTIONS:

In this section you will find a series of statements. There are five possible answers for each statement that go from "Completely agree" to "Completely disagree." You should choose the answer that most closely approximates your own opinion and put an "X" on the corresponding line. Example:

Playing with a ball is lots of fun.

Completely agree	Agree	Undecided	Disagree	Completely disagree

Please answer the following statements that are about Educational Television. Remember we want to know your personal opinions.

21. You learn more during classes with television than during classes without television.

Completely agree	Agree	Undecided	Disagree	Completely disagree

22. Classes with television are more difficult.

23. The picture-quality on television is good.

_____ _____ _____ _____ _____

24. It is easier to understand classes with television than classes without television.

_____ _____ _____ _____ _____

25. Classes with television do not give one enough opportunity to express his opinions.

_____ _____ _____ _____ _____

26. My parents know a lot about the use of television in my school.

_____ _____ _____ _____ _____

27. It seems that classroom teachers prefer to teach with television.

_____ _____ _____ _____ _____

28. It is more difficult to ask questions in classes with television than in other classes.

_____ _____ _____ _____ _____

29. Classes with television are more enjoyable than classes without television.

_____ _____ _____ _____ _____

30. From which of the following situations do you learn most?

_____from my own study
_____from my courses with classroom teachers
_____from written work or group projects in class
_____from Educational Television programs

31. From which of the following situations do you learn least?

_____from my own study
_____from my courses with classroom teachers
_____from written work or group projects in class
_____from Educational Television programs

Section IV

32. Which subject do you most like to study?

_____Mathematics
_____Natural sciences
_____Social studies
_____English
_____Spanish
_____All of the above

33. Which subject do you least like to study?

_____Mathematics
_____Natural sciences
_____Social studies
_____English
_____Spanish
_____All of the above

34. How far do you intend to go in school?

_____Finish Plan Basico
_____Finish a career course, after Plan Basico
_____Finish high school
_____Finish the university
_____Specialize after graduating from the university

35. How sure are you that you will finish the studies you hope to complete?

_____I am certain I will not finish
_____I believe I will not finish
_____I may finish
_____I believe I will finish
_____I am certain I will finish

36. Of the following reasons, mark the most important one that you believe would not permit you to study as much as you want to:

_____studies will be too difficult
_____opposition of my parents
_____lack of money
_____lack of opportunity
_____other reasons
_____no reason

37. What level of studies do you consider necessary for the majority of the Salvadorean population?

_____Primary school
_____Plan Basico (Jr. High)
_____Short career
_____High school
_____University

38. Who is most concerned about your education?

_____father
_____mother
_____another relative
_____another person who is not a member of the family
_____no one

39. Which career would you most like to follow when you finish your studies?

_____

40. The career noted by you in the previous question was chosen by you for which of the following reasons:

_____it pays a good salary
_____it is a respected career
_____that career is one that helps other people
_____it is a "short" career
_____you prefer it, but for no particular reason
_____other reasons

41. If for some reason you are unable to have the career you selected in Question 39, what kind of work will you probably do?

_____

42. What career would your parents most like you to have?

_____

43. How frequently do you talk to your parents about the careers you might have?

_____never
_____from time to time
_____frequently
_____very frequently

44. When you finish your studies, with whom would you like to work?

_____the government
_____a large company
_____a small company
_____on my own
_____with someone in my family

45. When you finish your studies and begin to work, where would you like to live?

_____in a small town
_____in a city other than San Salvador
_____in San Salvador
_____outside the country

46. When you finish your studies, would you be willing to live and work in a small town?

_____completely willing
_____more or less willing
_____more or less unwilling
_____completely unwilling

47. What monthly salary do you believe is necessary to live decently?

_____from 100 to 200 colones (1 colon equals $.40 U.S.)
_____from 200 to 300 colones
_____from 300 to 400 colones
_____from 400 to 500 colones
_____from 500 to 600 colones
_____more than 600 colones

48. Do you work in addition to attending school?

_____work for a salary outside of the home
_____work with parents or relatives and receive a salary
_____work only on household chores
_____do not work regularly

49. If at the end of Plan Basico you were to be offered a good paying job but one that would not permit you to continue your studies, would you take the job?

_____Yes
_____No
_____Undecided

50. What kinds of things do you like to do most in your spare time?

1. _____

2. _____

3. _____

Section V

51. How will life be for the majority of students in your class?

_____very similar to that of their parents
_____almost like that of their parents
_____generally different from that of their parents
_____very different from that of their parents

52. What is the best way to get ahead in a job?

_____to be intelligent
_____to work hard
_____to work a long time in the same place
_____to know how to work well with other people
_____to have friends or relatives who have influence

53. Consider each one of the following occupations and mark down whether you would be happy or unhappy to do that kind of work.

	Happy	Unhappy
A. Book keeper	____	____
B. Day-laborer	____	____
C. Engineer	____	____
D. Small farmer	____	____
E. Brick-layer	____	____
F. Doctor	____	____
G. Industrial technician	____	____
H. Chauffeur	____	____
I. Lawyer	____	____
J. Accountant	____	____
K. Architect	____	____
L. Electrician	____	____
M. High school teacher	____	____
N. Nurse	____	____
O. Bilingual secretary	____	____
P. Insurance agent	____	____
Q. Primary school teacher	____	____
R. Business manager	____	____
S. Soldier	____	____

54. Getting a good education is worth the sacrifice of being away from one's family.

Completely agree	Agree	Undecided	Disagree	Completely disagree

55. In general, it is better to accept a good job when it is offered, rather than continue one's education with the hope of getting a better job in the future.

56. Did you ever have to repeat a grade?

_____yes
_____no

57. What career do you think is most important for the development of El Salvador?

_____

STUDENT QUESTIONNAIRE (MEXICO, 1972)

Student: _____
Paternal Name Maternal Name First Name

School: _____
School Name School Number (Key)

Home Address: _____
Street Number Postal Zone

_____
Town Municipality State

INSTRUCTIONS: THIS IS NOT A TEST, IT IS A QUESTIONNAIRE. THERE ARE NO CORRECT OR INCORRECT ANSWERS; WHAT MATTERS IS YOUR OPINION, SO ANSWER SINCERELY.

Each of the following questions has one or more answers. Make an "X" on the blank spaces that correspond to the answers you select. When you have to complete information that is requested write on the space provided. Answer ALL questions. There is no time limit, but don't spend too much time on any one question.

GENERAL INFORMATION SECTION

1. Age: _____

2. Sex: _____ Female

_____ Male

3. Date of Birth: _____
Day Month Year

4. Of the following people, which live in your house?

_____ mother

_____ father

4. (continued)

_____ brothers or sisters

_____ grandparents

_____ other relatives

_____ others who are not relatives

5. Write the total number of people that live in your house (including yourself):

_____ total number of people

6. What kind of work does your father do? _____

7. What kind of work does your mother do? _____

8. Indicate the highest level of schooling attained by your parents:

A. Your Father		B. Your Mother	
Never went to school	_____	Never went to school	_____
Studied part of primary	_____	Studied part of primary	_____
Completed primary school	_____	Completed primary school	_____
Junior high school	_____	Junior high school	_____
Commercial school	_____	Commercial school	_____
Academic high school	_____	Academic high school	_____
University	_____	University	_____
Don't know	_____	Don't know	_____

9. How much time does it take you to get to school each day?

_____ less than 15 minutes

_____ between 15 and 30 minutes

_____ between 30 minutes and one hour

_____ more than one hour

10. Do you work as well as attend school? (Mark only one answer: the one that matches the activity that occupies most of your time after school.)

_____ work for pay outside my household

_____ work with my parents or other relatives and am paid

_____ work only on household chores

_____ I don't work

11. If you work for pay, about how much do you earn each month?

_____ pesos

SECTION II

12. Which of the following media do you have at home? (Make an "X" alongside those which you have at home).

_____ newspapers

_____ magazines

_____ radio

_____ television

_____ books

13. About how much time do you listen to the radio each day?

_____ never

_____ less than one hour each day

_____ 1 or 2 hours each day

_____ 3 or 4 hours each day

_____ more than 4 hours each day

14. How often did you read newspapers last week?

_____ never

_____ 1 or 2 times

_____ 3 or 4 times

_____ 5 or 6 times

_____ every day

15. How many books did you read last year? (Do NOT include comic books and school textbooks).

_____ none

_____ one book

_____ about 2 or 3

_____ between 4 and 10

_____ more than 10

16. How often did you go to the movies last month?

_____ never

_____ once or twice

_____ 3 or 4 times

_____ more than 4 times

17. Outside of school, how many times did you watch television last week?

_____ never

_____ once or twice

_____ 3 or 4 times

_____ 5 or 6 times

_____ every day

SECTION III

18. What is your favorite subject in school? _____

19. What is your LEAST favorite subject in school? _____

20. How far do you want to go in school?

_____ Finish only Secondary School

_____ Finish Teachers College or a Commercial Course after Secondary

_____ Finish Academic High School (Preparatory School)

_____ Finish the University or Polytechnical School

_____ Specialize as a graduate student of the University or the Polytechnical School

21. How sure are you that you will finish the studies you hope to complete?

_____ I am certain I will not finish

_____ I believe I will not finish

_____ I may finish

_____ I believe I will finish

_____ I am certain I will finish

22. Would you be willing to move away from your family in order to continue your education in the future?

_____ yes

_____ no

23. What career would you like to enter when you finish your studies?

_____

24. What is your main reason for selecting this career?

_____

25. If for some reason you are unable to have the career you selected in Question 23, what kind of work will you probably do?

_____

26. What do your parents think about your plans for the future?

_____ they are in complete agreement with me

_____ they are more or less in agreement with me

_____ they are more or less in disagreement with me

_____ they are in complete disagreement with me

_____ I don't know what my parents think

27. In general, what kind of job would you prefer in the future?

_____ a secure job, but one without the opportunity to advance

_____ a job with a good opportunity for advancement, but secure

28. If at the end of Ninth Grade you were to be offered a good paying job but one that would not permit you to continue your studies, would you take the job?

_____ Yes

_____ No

_____ Don't know

29. What monthly salary do you believe is necessary to live decently?

_____ from 500 to 1000 pesos (1 peso equals $.08 U.S)

_____ from 1,000 to 1,500 pesos

_____ from 1,500 to 2,000 pesos

_____ from 2,000 to 2,500 pesos

_____ more than 2,500 pesos

30. When you finish your studies, would you be willing to live and work in a small town?

_____ completely willing

_____ more or less willing

_____ more or less unwilling

_____ completely unwilling

31. When you finish your studies and begin to work, where would you like to live?

_____ in the countryside

_____ in a small town

_____ in a city other than the capital

_____ Mexico City

32. When you finish your studies, with whom would you like to work?

_____ the government

_____ a large company

_____ a small company

_____ on my own

_____ with someone in my family

SECTION IV

In this section you will find a series of statements. There are five possible responses to each statement, which run from "Completely Agree" to "Completely Disagree." You should choose the response closest to your personal opinion and make an "X" above the corresponding line. Example:

PLAYING WITH A BALL IS LOTS OF FUN.

X				
Completely Agree	Agree	Not Sure	Disagree	Completely Disagree

33. WHEN A PERSON FINDS A WELL-PAYING JOB, HE SHOULDN'T CHANGE FOR ANY REASON.

Completely Agree	Agree	Not Sure	Disagree	Completely Disagree

34. IN GENERAL, LIFE IS BEST IN SMALL TOWNS WHERE A PERSON KNOWS EVERYONE.

Completely Agree	Agree	Not Sure	Disagree	Completely Disagree

35. THERE ARE SO MANY THINGS I DON'T HAVE THAT I WOULD LIKE TO HAVE.

Completely Agree	Agree	Not Sure	Disagree	Completely Disagree

36. ONLY THOSE PEOPLE WHO CAN CHANGE THEIR IDEAS AS THE TIMES CHANGE CAN BE SUCCESSFUL IN THE MODERN WORLD.

Completely Agree	Agree	Not Sure	Disagree	Completely Disagree

37. WHEN A PERSON HAS FOUND A SECURE JOB, HE NO LONGER HAS TO WORRY ABOUT LEARNING NEW THINGS.

Completely Agree	Agree	Not Sure	Disagree	Completely Disagree

38. THERE IS SO MUCH TO DO IN THE WORLD THAT IT WOULD BE BAD TO LIVE ONLY IN ONE PLACE THROUGHOUT ONE'S LIFETIME.

Completely Agree Agree Not Sure Disagree Completely Disagree

39. I PREFER TO HAVE A WELL-PAYING JOB TO ONE THAT FULFILLS MY PERSONAL INTERESTS.

Completely Agree Agree Not Sure Disagree Completely Disagree

40. IT REALLY ISN'T IMPORTANT FOR A PERSON TO KNOW INTERNATIONAL NEWS, SINCE IT DOESN'T AFFECT ONE'S LIFE.

Completely Agree Agree Not Sure Disagree Completely Disagree

41. PEOPLE SHOULD BE SATISFIED WITH WHAT THEY HAVE.

Completely Agree Agree Not Sure Disagree Completely Disagree

SECTION V: TELESECUNDARIA (Answer these statements in the same way you did the previous section).

42. THE PICTURE-QUALITY ON TELEVISION IS GOOD.

Completely Agree Agree Not Sure Disagree Completely Disagree

43. CLASSES WITH TELEVISION ARE DIFFICULT.

Completely Agree Agree Not Sure Disagree Completely Disagree

44. THERE IS NOT SUFFICIENT TIME TO ASK QUESTIONS OR OFFER OPINIONS AFTER THE TELEVISION CLASSES.

Completely Agree Agree Not Sure Disagree Completely Disagree

45. MY PARENTS LIKE THE FACT THAT I RECEIVE TELEVISION IN MY SCHOOL.

Completely Agree Agree Not Sure Disagree Completely Disagree

46. IT SEEMS THAT CLASSROOM COORDINATORS PREFER TO TEACH WITH TELEVISION.

Completely Agree Agree Not Sure Disagree Completely Disagree

47. IT IS EASY TO CLARIFY DOUBTS IF I DON'T UNDERSTAND SOMETHING ON TELEVISION.

Completely Agree Agree Not Sure Disagree Completely Disagree

48. I WOULD PREFER TO STAY IN TELESECUNDARIA EVEN IF I HAD THE CHANCE TO GO TO A REGULAR SECONDARY SCHOOL.

Completely Agree Agree Not Sure Disagree Completely Disagree

SECTION VI: THE TELELESSONS

Instructions: Answer the following questions by marking an "X" next to the statement that is closest to your own opinion.

49. What do you think about the telelessons in Mathematics?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

50. What do you think about the telelessons in Spanish?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

51. What do you think about the telelessons in Physics?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

52. What do you think about the telelessons in English?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

53. What do you think about the telelessons in Chemistry?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

54. What do you think about the telelessons in Current Events?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

55. What do you think about the telelessons in Vocational Activities?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

56. What do you think about the telelessons in Civics?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

57. What do you think about the telelessons in Physical Education?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

58. What do you think about the telelessons in Music Education?

_____ I like them

_____ I neither like nor dislike them

_____ I do not like them

List of Occupations

01 unemployed
02 retired
03 self-employed

Level 1

10	bricklayer	19	mechanic
11	farmer	20	tradesman
12	driver	21	machinist
13	merchant	22	tailor
14	beautician	23	servant
15	industrial worker	24	telephone operator
16	photographer	25	waiter
17	day laborer	26	other occupations
18	policeman or soldier		

Level 2

31	salesman	40	pilot
32	accountant	41	radio technician
33	graphic artist	42	secretary
34	practical nurse	43	technician
35	social worker	44	extension agent
36	keypuncher	45	medical technician
37	teacher	46	master mechanic
38	military officer	47	other occupations
39	newspaperman		

Level 3

71	lawyer
72	agronomist
73	architect
74	biologist
75	dentist
76	diplomat
77	economist
78	civil engineer
79	professional nurse
80	pharmacologist
81	physicist, mathematician
82	business manager
83	musician or artist
84	oceanographer
85	psychologist
86	chemist
87	sociologist
88	veterinarian
89	engineer
90	professor or secondary school teacher
91	doctor
92	high-ranking military or police officer
93	other professions

CLASSROOM TEACHER SURVEY (EL SALVADOR, 1970)

Section I: Educational Television (ETV)

1. Students learn more with ETV than without it.

Completely agree *	Agree	Undecided	Disagree	Completely disagree

2. It is more difficult to maintain classroom discipline when using ETV.

3. Classroom teachers improve their methods by watching the teleteacher.

4. ETV diminishes the importance of the classroom teacher.

5. ETV classes are an obstacle to the interpersonal relations between the classroom teacher and and his students.

6. Students learn to study better by themselves when they receive their classes by ETV.

7. Classroom teachers learn to organize their schedules better with the ETV system.

*All of these questions (1-27) have the same five alternatives.

8. There is a serious obstacle to learning by ETV because students cannot ask questions until the program has ended.

_____ _____ _____ _____ _____

9. It is possible to teach more with ETV during the year, because ETV can cover more material.

_____ _____ _____ _____ _____

10. Instruction by ETV makes the student more passive in class.

_____ _____ _____ _____ _____

11. The ETV schedule does not allow enough flexibility for the classroom teacher to teach his material.

_____ _____ _____ _____ _____

12. ETV helps parents become more interested in the education of their children.

_____ _____ _____ _____ _____

13. Instruction by ETV gives information, but it cannot transmit values.

_____ _____ _____ _____ _____

14. Students would learn more if they didn't have ETV.

_____ _____ _____ _____ _____

Section II: Teaching and Education

15. Teaching is not a profession that gives much satisfaction.

_____ _____ _____ _____ _____

16. All youngsters should have the opportunity to finish Plan Basico (Jr. High School).

_____ _____ _____ _____ _____

17. Increases in enrollment reduce the quality of secondary education.

_____ _____ _____ _____ _____

18. The fundamental goal of education is to form the character of the child.

_____ _____ _____ _____ _____

19. I would encourage my best students to become teachers.

_____ _____ _____ _____ _____

20. Only the best students should continue studying after primary school.

_____ _____ _____ _____ _____

21. In El Salvador, teachers are much respected.

_____ _____ _____ _____ _____

22. The majority of jr. high school students is not very interested in learning.

_____ _____ _____ _____ _____

23. I would remain in education even if I found another job with a better salary.

_____ _____ _____ _____ _____

24. Many students do not respect their teachers.

_____ _____ _____ _____ _____

25. The most important goal of education is to develop reasoning.

_____ _____ _____ _____ _____

26. The great majority of students is motivated to make good use of jr. high school education.

_____ _____ _____ _____ _____

27. The current Educational Reform is moving toward high quality jr. high school education.

_____ _____ _____ _____ _____

Section III: The Prestige of Occupations

28. Please indicate your idea of the prestige of each one of the following occupations (mark your answer with an "X" in the appropriate space).

	Very high	High	Average	Low	Very Low
A. Bookkeeper	____	____	____	____	____
B. Day-laborer	____	____	____	____	____
C. Engineer	____	____	____	____	____
D. Small farmer	____	____	____	____	____
E. Brick-layer	____	____	____	____	____
F. Doctor	____	____	____	____	____
G. Industrial technician	____	____	____	____	____
H. Chauffeur	____	____	____	____	____
I. Lawyer	____	____	____	____	____
J. Accountant	____	____	____	____	____
K. Architect	____	____	____	____	____
L. Electrician	____	____	____	____	____
M. High school teacher	____	____	____	____	____
N. Nurse	____	____	____	____	____
O. Bilingual secretary	____	____	____	____	____
P. Insurance agent	____	____	____	____	____
Q. Primary school teacher	____	____	____	____	____
R. Business manager	____	____	____	____	____
S. Soldier	____	____	____	____	____

Section IV: Problems in Education

29. According to your personal experience, please indicate how you consider each of the following problems, answering with an "X".

Problems in the Classroom

A. Guides and workbooks don't arrive on time.

Very serious	Serious	Minor	Very minor

B. Lack of teaching materials.

C. Too many students in class.

D. Poverty of the students and their environment.

E. The behavior of students.

F. Technical problems in the reception of teleclasses.

Problems in the Educational System

G. Lack of supervision.

H. Lack of parents' cooperation.

I. The economic situation of teachers.

J. School administration.

_____ _____ _____ _____

K. The efficiency of the Ministry of Education.

_____ _____ _____ _____

L. Lack of teachers with a "vocation" for teaching.

_____ _____ _____ _____

M. Changes in the system of evaluation and promotion.

_____ _____ _____ _____

N. Method of appointing teachers.

_____ _____ _____ _____

Section V: Personal Data

30. Birthplace: City_____

Department of_____

Do you reside in the city where you teach? Yes____ No____

If you answered "No" above, where is your permanent residence?

City_____

Department of_____

Age_____ Sex: Male_____ Female_____

31. Mark in one of the following blanks how long you have been teaching with ETV:

First year I've taught with ETV _____
Second year I've taught with ETV _____
I don't teach with ETV _____

32. Mark in the blanks your classification as primary school teacher, if you have one, and for the other levels mark only those you have graduated from, except university.

Teacher classification:

_____Class B
_____Class A
_____High school
_____Accountant
_____Class A and High school
_____Class A and Accountant
_____High school and Accountant
_____Class A, High school and Accountant

Higher education:

_____No higher education
_____Superior Normal
_____1-2 years at the university
_____3 or more years at the university

33. Date when became a teacher _____
Date when became a secondary teacher _____

34. Mark with an "X" the subjects you teach.

_____Mathematics
_____Natural science
_____Social studies
_____Spanish
_____English

CLASSROOM TEACHERS' FEEDBACK SURVEY (EL SALVADOR, 1970-1972)

INSTRUCTIONS:

The following material refers only to the Math* course at the grade level indicated. Please consider only this course when giving your answers.

For each of the following questions you should respond in the following manner:

If the statement is: "The ability of most students to learn Mathematics"

1 2 3 4 5

you should decide whether you think that ability is high or low. If you think it is very high, you should make a circle around the number "5". If you think it is very low, you should make the circle around the number "1". If the ability is mid way between high and low, "3" would be the appropriate number to circle. If it is high, but not very high, you should circle the number "4". If it is low, but not very low, you should circle the number "2".

Learning

1. What students learn from mathematics with ETV.

   1 2 3 4 5

2. What students learned from mathematics before the introduction of ETV.

   1 2 3 4 5

Motivation

3. The motivation of the students in mathematics since the introduction of ETV.

   1 2 3 4 5

4. The motivation of students in mathematics before the introduction of ETV.

   1 2 3 4 5

---

* Prepared according to the subject and grade taught.

Guides for Teachers of Mathematics

5. The aid to teaching given by the guides of mathematics.

   1 2 3 4 5

6. The practical value of classroom activities suggested by the guides for mathematics.

   1 2 3 4 5

7. The relationship between the guides of mathematics and the teleclasses of mathematics

   1 2 3 4 5

The Teleteacher of Mathematics

8. The teleteacher's knowledge of mathematics.

   1 2 3 4 5

9. The teleteacher's ability to teach mathematics.

   1 2 3 4 5

10. The teleteacher's ability to make students participate.

    1 2 3 4 5

11. The teleteacher's ability to teach mathematics, in comparison with the majority of classroom teachers.

Much less	Less	Equal	Much more	More

Student Workbooks for Mathematics

12. The number of exercises generally included in the workbooks:

Very insufficient	A bit insufficient	Adequate	A bit excessive	Very excessive

Teleclasses for Mathematics

13. In general, the content of the teleclasses is:

Very insufficient	A bit insufficient	Adequate	A bit excessive	Very excessive

14. The quantity of exposition by the teleteacher is:

Very insufficient	A bit insufficient	Adequate	A bit excessive	Very excessive

15. The quantity of audiovisual materials (movies and slides) used in the teleclasses is:

Very insufficient	A bit insufficient	Adequate	A bit excessive	Very excessive

16. The legibility of graphics (drawings, signs, etc.) used in the teleclasses is:

1 2 3 4 5

17. What the audiovisual materials (movies and slides) contribute to the effectiveness of teleclasses is:

1 2 3 4 5

Teaching

18. The help that ETV could provide (at its maximum) in the teaching of mathematics:

1 2 3 4 5

19. The help that ETV, since its introduction, has given in the teaching of mathematics:

1 2 3 4 5

TEACHER OBSERVATION FORM (MEXICO, 1971)

SCHOOL _____ OBSERVER _____

TEACHER _____ TOWN _____

GRADE _____ DATE _____

SUBJECT _____ TV ☐ NO TV ☐

THEME OF LESSON _____ [*Specify material or activity, by number]

TEACHER

1. Teacher behavior during teleclass:

_____

_____

2. Lectures
3. Dictates
4. Explains (Responding to Spanish question
5. Asks procedure questions
6. Asks memory questions
7. Asks stimulus-response memory questions
8. Asks opinion questions
9. Asks thought questions
10. Asks for examples
11. Uses blackboard
12. Uses audio-visual materials
*13. Reads from reference works
*14. Supervises individual seat-work
*15. Works individually with students
*16. Supervises group work
17. Suggests group projects
18. Assigns homework
19. Assigns investigations as homework
20. Checks homework
21. Chaos or silence
22. The teacher had prepared his class in advance

Yes ☐ No ☐

STUDENTS

1. Student behavior during teleclass:

_____

_____

*2. Expound
*3. Dictate
4. Ask clarification questions
5. Ask other questions (p,m,o,r)
6. Give opinions
7. Do question-answer drills
8. Do dramatizations
9. Do repetition drills
10. Translate
*11. Work individually
12. Work in groups
13. Go to blackboard
*14. Use audio-visual materials
*15. Use textbooks
*16. Use reference works

Other comments: _____

SCHOOLS AND COMMUNITIES SURVEY (EL SALVADOR, 1971)

The School

A. Building

1._____it is rented _____it is owned by the government

2. Date of construction_____

3. Construction material of the building_____

4. Design as a school:

_____poor _____mediocre _____good

5. Sufficient lighting (natural or electric):

_____sufficient _____insufficient _____very insufficient

7. General conditions of the building:

_____poor _____mediocre _____good

B. Teaching Conditions

1. The noise from some classes or from physical education bothers other classes:

_____rarely _____sometimes _____frequently

2. Sufficient teaching materials:

_____sufficient _____insufficient _____very insufficient

3. Specific materials that are needed:

_____

4. Quality of the teaching materials:

_____poor _____mediocre _____good

C. Classrooms

1. Number of classrooms:_____

2. Taking into account the current number of students that use them, the size of the classrooms is:

_____too big _____too little _____just right

D. Desks

1._____they are owned by the Ministry _____owned by the students

_____owned by the Patronato (Local sponsoring group)

2._____there are enough _____not enough How many lacking_____

E. Facilities

_____there is a library for the teachers

_____there is a library for the students

_____there is a special room for the library

_____there is a laboratory

_____there are bathrooms

_____there is a recreation area

_____there is an area for physical education

_____there is an auditorium

_____there is a mimeograph machine

F. Location

1. The climate bothers the classes:

	In the morning	In the afternoon
rarely	_____	_____
sometimes	_____	_____
frequently	_____	_____
very frequently	_____	_____

2. The noise from outside the school bothers the classes:

_____rarely _____sometimes _____frequently _____very frequently

G. Administration

1._____Combined with an Institute* (in the same building)

_____Combined with a Primary School (in the same building)

_____Not combined with any other school

2. The number of students in the Third Cycle:_____

In the morning: 7th_____ 8th_____ 9th_____

In the afternoon: 7th_____ 8th_____ 9th_____

3. The number of teachers in the Third Cycle:_____

How many teach both morning and afternoon_____

How many teachers short are you_____

How many have to teach a subject outside their speciality_____

4. The number of classes in Third Cycle:_____

In the morning: 7th_____ 8th_____ 9th_____

In the afternoon: 7th_____ 8th_____ 9th_____

H. The School Director

1._____permanent position _____temporary appointment

2. Sex_____

3. Experience:

How many years of teaching experience has he had_____

How many years experience as a director has he had_____

*An Institute is a senior high school

4. Training:

_____graduate of Normal School

_____graduate of Bachillerato

_____graduate of the Superior Normal School

5. Retraining:

_____a year at San Andres

_____three summers at San Andres

_____one summer at San Andres

_____none

6. Domicile:

_____lives permanently in the community

_____lives in the community only during the week

_____lives outside the community

7. What are the major problems the school has?

_____

_____

I. The Students

1. Where do the students come from?

_____all of them come from the city

_____the majority come from the city, others from the Cantones*

_____the majority come from the Cantones

2. Is the mix of students different in 7th than in 8th or 9th?_____

In what way is it different_____

3. Do you have problems with student conduct?

_____rarely _____sometimes _____frequently _____very frequently

*A Canton is an administrative division of unincorporated rural areas

4. Have you had time to organize extracurricular activities this year?

_____yes _____no

What kind	How often
_____	_____
_____	_____
_____	_____

5. Have you had more activities in past years?

_____yes _____no

If yes, why the change this year_____

6. Do all of your 7th grade students come from one or from a number of primary schools?

_____all of them come from one primary

_____the majority come from one, but some come from other(s)

_____they come from a number, with: _____equal preparation

_____different levels of preparation

7. Have you had meetings with the parents group this year?

_____yes How many times_____

For what reasons_____

_____

_____

_____no

The Community

A. Available Education

1. Are there schools in the community where students can continue their education after Third Cycle?

_____there are commercial courses day_____ night_____

_____there is a Bachillerato day_____ night_____

_____there are no such schools

2. If there are no such schools in the city, are there such schools in the area where students can commute every day?

_____Commercial Schools day_____ night_____

_____Bachillerato day_____ night_____

_____there are no such schools

3. What are the graduates of last year doing?

_____% have looked for work

_____% have looked for work and begun to go to night classes in

_____the Bachillerato _____the Commercial School

_____% are going to the Bachillerato during the day

_____% are going to the Commercial School during the day

_____% other_____

4. How easy is it for the graduates of Third Cycle to find work appropriate to the level of their education in this city?

	Men	Women
All can find work	_____	_____
The majority can find work	_____	_____
50% can find work	_____	_____
The majority can't find work	_____	_____
No one can find work	_____	_____

B. Accessibility

1. How long does it take to go by bus to (Santa Ana, Sonsonate, San Miguel, San Salvador)?

_____

2. How many buses a day come here?_____

3. How long does it take to go by bus to San Salvador?_____

4. How many buses go to San Salvador from here every day?_____

5. How far is it to the closest paved highway?_____

C. Specific Data

1. Is there a Bank here?_____

2. Is there a movie theater here?_____

3. What is the population?_____

4. How many private phones?_____

5. How many registered vehicles?_____

6. What is the percentage of paved streets in the city?_____

7. How many newspapers sold?_____

PARENT INTERVIEW (EL SALVADOR, 1970)

1. Name of parent: _____

2. Name of student: _____

3. Name of school: _____

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4. Including ___*___, how many sons and daughters do you have? _____

4a. How many are older than ___*___? _____

(Note: if there are sons and daughters older than ___*___, ask questions 4b and 4c.)

4b. What are the sons and daughters older than ___*___ doing now?

		m or f
1.	_____	_____
2.	_____	_____

(Note: for the older children that are not studying, ask question 4c.)

4c. After what grade did they leave school, and why?

	Grade after which they left school	Reason for leaving
1.	_____	_____
2.	_____	_____

5. What level of studies do you hope * will complete?

_____ Plan Basico _____ University

_____ Carrera Corta _____ Post-graduate studies

_____ Bachillerato _____ Other, specify: _____

6. What advantages would * have if he finished (answer 5)?

1. _____

2. _____

Can you think of any other advantage or benefit?

3. _____

4. _____

7. Is there something that might prevent * from finishing (answer 5)?

_____ Lack of will to continue studying

_____ Lack of money

_____ Poor grades

_____ Lack of opportunity (distance of the school, etc.)

_____ There is nothing to prevent him from finishing

_____ Other reason, specify: _____

8. What kind of student is your son?

_____ Very good _____ Bad

_____ Good _____ Don't know

_____ Fair

9. If * had to leave the family and live in another part of the country to continue his studies after Plan Basico, would you encourage him to do so?

_____ Yes _____ No _____ Don't know

(Note: if parent answers "yes," ask question 9a.)

9a. Would you be willing to pay the extra money that would be necessary to send your son to study in another part of the country?

_____ Yes _____ No _____ Part of it _____ Don't know

10. Do you think it's possible for a young man to study longer than is really necessary or practical for him or his parents?

_____ Yes _____ No _____ Don't know

(Note: if parent answers "yes," ask questions 10a and 10b.)

10a. What do you think of a young man who studies longer than is really necessary or practical?

_____

_____

_____

10b. Do you think that those things could happen to * ?

_____ Yes _____ No _____ Don't know

_____

_____

11. Do you think a lot of schooling is absolutely necessary for success, or do you think that an ambitious and hard-working young man could be successful without much schooling?

___ Schooling is necessary ___ Schooling is not necessary

___ Don't know

12. Being as realistic as possible, how sure are you that * will remain in school until the end of (answer 5)?

_____ Am sure he'll stay in school

_____ Am fairly sure he'll stay in school

_____ Am not very sure he'll stay in school

_____ Am sure he'll not stay in school

13. Thinking about the future a little, what kind of work would you most like * to do when he finishes his studies?

_____

14. Why do you prefer that job for * ?

_____

_____

15. Do you know what job your son himself prefers?

_____ Yes _____ No

(Note: if parent answers "yes," ask question 15a.)

15a. What is the job your son prefers?

_____

16. If your son were offered a job with a good salary when he finished Plan Basico, would you encourage him to take the job or to continue his studies?

_____ to take the job

_____ to continue his studies

_____ to take the job and continue his studies at the same time

_____ Don't know

17. At what age, more or less, do you think that * should be ready to start work and begin supporting himself?

_____

18. I'm now going to read you a short list of various kinds of occupation. After reading each one, please tell me if you would be happy or unhappy if * chose that kind of work in the future.

Occupation	Happy	Unhappy
Bookkeeper	____	____
Day laborer	____	____
Engineer	____	____
Agricultural technician	____	____
Bricklayer	____	____
Doctor	____	____
Industrial technician	____	____
Chauffeur	____	____
Lawyer	____	____
Accountant	____	____
Architect	____	____
Electrician	____	____
Teacher	____	____

19. What are * 's favorite subjects at school?

_____

_____

____ Don't know

20. How much time does * usually spend doing his homework each day?

____ less than half an hour
____ One hour
____ Two hours
____ Three hours
____ More than 3 hours
____ Don't know

21. How frequently does * ask you to help him with his homework?

_____ Everyday _____ Once a month

_____ Once or twice a week _____ Never

22. In general, what do you like most about the education your son is receiving at this school?

_____

_____

23. Without considering the cost, what changes would you like to see made to improve the education your son is receiving at this school?

_____

_____

_____ No change _____ Don't know

24. Is this your first visit to school this year?

_____ Yes _____ No

25. Have you had a chance to talk to some of the teachers about the progress of your son?

_____ Yes _____ No

(Note: if parents answer "yes," ask question 25a.)

25a. What do the teachers or the principal say about the progress of your son?

_____

_____

26. Have you heard or read anything about the Educational Reform?

_____ Yes _____ No

(Note: if parent answers "no," omit question 27 and go on to question 28.)

27. Could you by any chance recall some of the things the Ministry of Education has been doing since it began the Educational Reform?

_____

_____

28. Have you ever seen one of the Educational Television programs?

_____ Yes _____ No

(Note: if parent answers "yes," ask question 28a.)

28a. Where did you see the educational television program?

_____ at home

_____ at school

_____ someplace else, specify: _____

29. Do you have a television set at home?

_____ Yes _____ No

30. Some parents think that students learn more when they have classes with television; other parents think that students learn more without television. Do you think students learn (would learn) more with or without television?

_____ they learn more with television

_____ they learn more without television

_____ don't know

31. Some parents think that television classes harm students' eyes; other parents think that television doesn't harm students' eyes any more than reading a book. What do you think?

_____ TV classes harm students' eyes

_____ TV classes don't harm students' eyes

_____ don't know

_____

_____

32. Some parents think that when students study with television they become more alert and enthusiastic about studying; other parents think that television makes students more passive and less alert. In your opinion, what is (would be) the effect of television?

_____ makes students more alert and enthusiastic

_____ makes students more passive and less alert

_____ no opinion

_____

_____

33. Some parents think that television makes more work for the classroom teacher; others think it makes less work for the classroom teacher. What do you think TV does (would do) to the classroom teacher?

_____ makes more work for the classroom teacher

_____ makes less work for the classroom teacher

_____ don't know

34. Until now educational television has been used only in Plan Basico. Do you think the use of educational television should be extended? Or should it remain just in Plan Basico? Or would you agree with eliminating it completely?

_____ should extend the use of ETV

_____ ETV should remain just in Plan Basico

_____ ETV should be completely eliminated

35. Why do you think that ETV should be (answer 34)?

_____

_____

36. (Note: This question is only for parents whose sons are in classes with ETV.)

Have you noticed anything new or different in * since he began to have classes with television? (Obtain specific answers whenever possible.)

_____

_____

In his study habits? _____

_____

In his interests? _____

_____

Is he different from your other children who do not have classes with television? _____

_____

STOP HERE FOR A LITTLE REST AND INTRODUCE THE NEXT SECTION

37. How old are you? _____

38. Where were you born? _____

39. How long have you lived in_____? _____

40. What opportunity did you have to study (i.e., what level of studies did you complete?)?

_____ Didn't study

_____ Part of primary

_____ All of primary

_____ Plan Basico

_____ Carrera Corta

_____ Bachillerato

_____ University

41. Do you feel that that level of education has been sufficient for you?

_____ Yes _____ No _____ Don't know

(Note: if parent answers "no," ask questions 41a and 41b.)

41a. Could you tell me why it hasn't been sufficient?

_____

_____

41b. How many more years of school would you have liked to complete?

_____ Finish primary

_____ Plan Basico

_____ Carrera Corta

_____ Bachillerato

_____ University

42. Have you received any training or special courses since you left school? (For example: agricultural extension courses, business seminars, etc.)

_____ Yes _____ No

(Note: if parent answers "yes," ask question 42a.)

42a. What kind of training or special course did you receive?

_____

43. Some parents think that if they had had more years of study, their manner of life would be very different from what it is now; other parents think that more years of study really wouldn't have meant much, their lives would be more or less the same. What do you think?

_____ with more studies my manner of life would be very different

_____ more studies wouldn't have changed my manner of life

_____ no opinion

44. What kind of work do you do?

_____

45. How long have you worked at that job?

_____ for a year or less

_____ 2-5 years

_____ 6-9 years

_____ 10 years or more

46. Do you work for yourself or for someone else?

_____ for myself _____ for someone else

47. Which of the following expressions best describes how you sincerely feel about your work?

"It's a bad job" _____

"It's a job like any other" _____

"It's a good job" _____

"It's an excellent job" _____

48. Have you ever had any other kind of work?

_____ Yes _____ No

(Note: if parent answers "yes," ask question 48a.)

48a. What other kinds of job have you had?

A. _____

B. _____

C. _____

49. What sort of work do you most like?

_____

50. Has it been difficult or easy for you to find that sort of work?

_____ easy _____ difficult _____ neither easy nor difficult

51. Of all the different jobs you can think of, which would you most like to do?

_____

52. Outside of work, what activities do you most enjoy for rest and relaxation?

_____

_____

What activities do you and your family like to do together?

_____

53. What kind of work did your father do?

_____

54. What level of studies did your father complete?

_____ Didn't study _____ Plan Basico

_____ Part of primary _____ Carrera Corta

_____ all of primary _____ Bachillerato

_____ University

55. Being realistic, do you think your manner of life has been similar to that of your parents, or has it been very different from theirs?

_____ It has been similar to that of my parents

_____ It has been very different from theirs

_____ don't know

56. Do you think your son's manner of life will be similar to yours, or very different from yours?

_____ Similar _____ Different _____ Don't know

57. Considering everything, do you think the opportunities for your son are better, worse, or the same as those you had when you began?

_____ his opportunities for success are better

_____ his opportunities for success are worse

_____ his opportunities for success are the same

_____ no opinion

PARENT'S OBSERVATIONS:

INTERVIEWER'S OBSERVATIONS: